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The College Suggestor is an optical coincident system of information retrieval consisting of a series of plastic cards. Each card represents a characteristic of an institution and contains grid positions for 1,931 colleges and universities. The system of 217 card is so designed that the location of each college on the grid position is coincident when the cards are stacked. The retrieval aspects of the system involve selecting cards representing characteristics that conform to the interests of a prospective college student, and stacking the cards so that they are in line. When cards are superimposed one on the other, points of light are produced at grid positions representing colleges in the stack that have common characteristics. The study sought to construct 300 of these devices, place them in college admission situations in high schools, and evaluate their use and the characteristics they represent. For 5 months the College Suggestor was used by students, counselors and parents in 5 high schools in the Chicago metropolitan area and data were obtained from the students and counselors about its utility. The 217 characteristics in the College Syggestor system were judged by both students and counselors to be a useful, comprehensive organization of information about colleges which could be used to expedite institutional identification. A list of 8 conclusions and 10 recommendations is included. (WM)

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The research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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Summary

(a) The Problem:

Under Project X-014, Contract No. OE-6-10-147 of the Office of Education, information was collected about 1,951 college and universities in the United States for the purpose of including this information in an optical coincident system of information retrieval known as the College Suggestor. The College Suggestor consists of a series of plastic cards each containing a grid with small rectangles. Within each rectangle is a code number representing one of the colleges in the system. Each plastic card represents a characteristic of a college. The system of 217 characteristics, or 217 plastic cards, is designed so that the location of each college on the grid is coincident when the cards are stacked. If a college has the characteristic represented by the card, an aperture is left in the square for that college so that light may shine through. The retrieval aspects of the system consist of selecting the cards representing the characteristics a student may wish to find in a college to attend and stacking the cards so that they are in line. Those "holes" where light shines through represent colleges having all of the characteristics designated by the cards in the stack.

The present investigation sought to construct 300 of these devices, place them in college admission situations in high schools, and evaluate their use and the characteristics they represent. For this purpose, five high schools in the Chicago metropolitan area were selected for the field test. Data were collected from the juniors in these high schools before the use of the device in order to find out the importance, or lack of importance, of the characteristics in the system for college choice. The 300 devices were manufactured and distributed to the high schools involved in the study. The devices were used in independent situations, with counselors, and with parents. After a five month use of the College Suggestor in these schools, data were obtained from the students and counselors about use.

(b) Results:

The College Suggestor was used by approximately 420 students at least once during the year. In addition, the responses obtained before use relative to the primacy of the characteristics involved approximately 1,600 students. From an examination of the data, the following conclusions appear to be supported:

(1) Approximately one-fourth of the student users indicated that they located colleges through the system which they had not considered before.

(2) The most frequently used characteristics were those relating to major fields of study and to admissions information and requirements. The least used characteristics were those relating to technical and occupational programs and to degrees held by the faculty.

(3) The most useful characteristics appeared to be the major fields of study.

(4) The users indicated the presence of design problems in the device itself which was a limiting factor on its usefulness.

(5) The characteristics were judged by counselors and students to be relevant to the needs of students entering the college admissions process.

(6) Males and females, with minor variation, appeared to exhibit the same interest patterns with respect to the type of college characteristics represented in the system.

(7) The College Suggestor represents a successful application of the process of optical coincidence to an information retrieval problem in a special field of education.

(8) The College Suggestor demonstrates the contribution which a technology of education can make to the field of counselor education.

Introduction

(a) Background for the Study:

More students than ever before seek to extend their educational experiences beyond high school by applying to colleges or universities offering either two or four year programs. In many cases, these attempts by the high school student involve applications to many institutions. The process of "matching" students to colleges is one which occupies countless hours on the part of students, college admissions counselors, and parents seeking colleges which best fit the matrix of characteristics which the student looks upon as desirable. The field test and research reported here represent one method of expediting this process of matching colleges with desired characteristics, The College Suggestor, a data retrieval system which is described below, seeks to fill a guidance need in education which has been brought about by the increased pressures in our culture toward college attendance. The College Suggestor is not proposed as a substitute for the personal relationship fundamental to the guidance process; neither does it propose to define college choice solely in terms of the criteria represented by the information which it contains. Rather, the hypothesis is advanced that the device should provide a valuable resource for the counselor and the counselee in identifying those colleges which the college-bound student feels should be investigated in depth. The activities reported here represent an evaluation of the validity of this general hypothesis.

(b) The College Suggestor:

The attention of the reader is called to the Final Report of Project No. X-014, Contract No. OE-6-10-147, Department of Health, Education, and Welfare, Office of Education, Bureau of Research.[1] The activities reported in this document provide relevant background for the evaluation reported here. Specifically, the Final Report of Project X-014 describes in detail the development of the prototype model of the College Suggestor, the collection of the college characteristics contained in the system, the production of a set of prototype master cards, and the colleges which did not respond to the questionnaire requests submitted to them for information. A review of this document is essential to understanding the activities reported in their proper sequential context in the present report.

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[1] A summary of the final report of this project is given in Appendix 3.

The College Suggestor is designed to identify colleges and universities meeting certain requirements which conform to the interests and desires of the prospective college student as identified either individually or together with parent and/or counselor. The device is a manual optical coincidence, inverted card sort system. The system is made up of transparent plastic cards underprinted with opaque and translucent inks. Each of the 217 plastic cards describes a single characteristic (i.e., tuition above or below a certain figure) and contains a mark to identify each with that given characteristic. Each college in the system has a unique number for identification purposes which is located on the identical grid intersection position on every card. When a college has a characteristic represented by a specific card, the grid is left clear at that position so that light will shine through. If the college does not have the characteristic, its grid position is left opaque. All colleges with a given characteristic are identified by these light "holes" in that card (the organization of information by characteristic rather than by college constitutes inverted filing while the use of "holes" to identify colleges constitutes optical coincidence). To retrieve data from the system, this optical coincidence principle is used. Individual cards are selected by hand representing college characteristics available at different colleges which are of interest to the student. The selected cards are superimposed one on the other. Where positions on the cards are coincident, points of light are visible. The optical coincidence which produces points of light constitutes a match of stored information with respect to a search question concerning colleges with given characteristics. These light dots represent colleges having the selected characteristics in common. At the position of the light dots, reference numbers are available. By referring to a manual these numbers can be used to identify by name the colleges which have been turned up as a result of the search.

The College Suggestor classifies for instant retrieval information characterizing 1,931 junior colleges, colleges, and universities. The system identifies all colleges where each of the differentiating characteristics is present. The system can be used either through prior selection of college characteristics regarded to be of interest, or by browsing in order to determine those characteristics which are relevant in a given situation. In use, a student identifies those characteristics of colleges related to his own abilities, interests, and needs. He does this either with a counselor or as an independent activity. He selects cards from the device which are descriptive of the characteristics which interest him, squares off his deck of cards, and notes the numbers of those colleges which combine all of the characteristics which interest him. If he turns up too man colleges, he may add cards; if he feels the need for a larger selection of colleges, he may remove cards representing overly restrictive college choice criteria of secondary importance. This browsing mode represents one of the strengths of the College Suggestor system.

With a number of colleges suggested to him, the student may turn to handbooks, guides, college catalogues, and the college admissions counselor to learn more about the institutions he has identified. The College Suggestor system represents a mechanism which provides a means for the immediate identification of relevant colleges so that the process of studying these institutions in depth can be expedited.

Two hundred seventeen characteristics are included in the field test model of the College Suggestor. Categories into which the characteristics are organized are as follows: (1) location of the college, (2) size of the student body, (3) costs, (4) financial aids available, (5) type of control, (6) type of academic program, (7) characteristics of student body, (8) characteristics of faculty, (9) prerequisites, (10) general admission information, (11) degree majors, and (12) occupational and terminal programs available. Appendix 1 lists these characteristics.

(c) Related Research:

The development and evaluation of the College Suggestor draws upon a number of areas of research and development. Specifically, the project relates to work reported in the literature relating to information storage and retrieval. Depth indexing, inverted filing, and optical coincidence yield the methodological elements for the development. Content to go in the system has drawn upon previous work in the taxonomical classification of higher education. A detailed account of related research including pertinent references is included in the Final Report of Project X-014 cited above. The reader is invited to consult this document for citations which are relevant to the activities reported here.

Methods

(a) Objectives:

The characteristics which were collected for inclusion in the College Suggestor system, together with the device itself, were considered to be a significant supportive tool for the college-bound high school student and the college admissions counselor to justify their evaluation through a procedure to be described below. Models of the device were placed in selected counselor-counselee situations and in independent use situations to determine the primacy of the characteristics (which were more or less useful in aiding decisions about college choice) and to determine the effectiveness of the device as one type of data system for expediting the dissemination of information about colleges in a college bound population. The major objective was to evaluate the 217 characteristics of the 1,931 junior colleges, colleges, and universities in terms of their relevance to the decision-making process concerning college choice and to evaluate the use of these characteristics in one type of data retrieval system -- the College Suggestor. The major objectives, then, of this investigation were:

(1) The assessment of the college characteristics, contained as information in the College Suggestor system, as a usable and effective source of information to guide the decisions which high school students make concerning the choice of a college to attend.

(2) The evaluation of the College Suggestor system as one possible approach to the organization and presentation of college characteristics in a retrieval mode which provides for immediate access to information about colleges.

Specifically, the investigation sought answers to questions such as the following which relate to one or both of the objectives given above:

(1) In what respect does the process of college choice appear to be a function of College Suggestor availability and use?

(2) Which characteristics are most used and which are least used from the 217 available in the system?

(3) What characteristics of colleges need to be added to the present universe?

(4) What grouping of characteristics is most useful for student use?

(5) Does the independent use of the system by students appear to be as effective as guided use in conferences with a counselor?

(6) Do students and counselors react favorably to the use of data about colleges which is in the form of the information contained in the College Suggestor system?

(7) Do students and counselors react favorably to the type of data retrieval system used in this investigation?

(b) Procedures:

The investigation was divided into two general phases of effort. During the summer of 1967 arrangements were made to manufacture 300 prototype models of the College Suggestor using the plates which were developed as part of Project No. X-014. In addition, consulting agreements were entered into with Mr. Roger Marshall of Arlington, Virginia, and with Dr. Wesley W. Walton of Princeton, New Jersey. Mr. Marshall, an electronics consultant, played an active role in the completion of Project No. X-014 by providing a highly technical knowledge of the processes involved in ink printing on plastics. Dr. Walton was also active in the completion of Project No. X-014 through his role at the Educational Testing Service of coordinator for the ETS sub-contract involved in that project. Mr. Marshall solicited bids from several companies capable of printing on plastic. In consultation with a contracts office in the Office of Education, the estimate of A. Hoen & Company, Chester and Biddle Streets, Baltimore, Maryland was judged to be the most acceptable from the standpoint of cost and capability of the company to deliver on the basis of the specifications submitted to them. These manufacturing specifications are presented in Appendix 2.

A. Hoen & Company represents an old reliable printing and lithographing firm in Baltimore which has a number of contracts with the Federal Government in the field of map and chart production. The proximity of the firm to Washington made it easy for Mr. Marshall to monitor the preparation of the plastics to insure their confirmation to the specifications. The Hoen price, which was several dollars per unit below that of the next lowest estimate, was for $79.00 per unit for 300 delivered to Northwestern University. Contractual permission was granted for this unit price. Included in the Hoen estimate was preparation of the plastic cards, the construction of a box for the cards and the printing of a manual containing the list of characteristics and the list of colleges in the system. A purchase order for the 300 models was issued to Hoen & Company on June 9, 1967. Because of the limitation of funds resulting from a renegotiation of the contract to bring it in line with a $50,000 ceiling imposed by the Office of Education, no opportunity was available to the manufacturer to engage in trial runs with the plastic. Difficulty was encountered in running the plastic through the presses. The heat generated by the printing process stretched the plastic minutely. These minor imperfections in the plastic sheets were such that machine trimming for tolerance specifications was not possible. The cards were trimmed by hand to meet the specifications called for in the contract with Hoen & Company. For this reason, a delay of some two months was encountered in the completion of the first prototypes. All 300 prototypes were delivered, conforming to specifications, by December, 1967. The unexpected additional costs encountered by the manufacturer resulted in a financial loss in the production of the prototypes. The investigator wishes to commend the Company for its diligence in discharging the obligations of its contract.

In addition to the prototypes of the device, the manufacturing phase resulted in the purchase of 300 plastic support stands for the cards at a unit price of $1.50 each. These support stands were used by the student as a viewer for the cards. Small strips of plastic down the left side and across the bottom of the viewer provided a means for lining up the cards so that each square on the card would be co-incident. Appendix 9 represents the directions accompanying this viewer.

The second phase of effort, that of data collection, began during the last week of September, 1967 with the selection of the high schools to be used in the evaluation and field test. Five high schools in the Chicago area were approached concerning participation in the field test. All five agreed to cooperate fully. Each high school was paid a consulting fee of $50.00 per month for the nine months involved in the collection of the data. Arrangements were made at each high school for this fee to go into the guidance fund for college admissions materials. In addition, each high school was told that they would be able to use the prototype models after the field test as long as they understood that the models were the property of the Office of Education and could be subject to return at the request of the Office of Education. During the first several weeks of the field test as prototype models were received from the manufacturer and distributed to the schools, a number of calls were received from high schools in the Chicago area asking to be included in the field test. The project director worked closely with the Executive Secretary of the Association of College Admissions Counselors in Evanston, Illinois, in selecting the high schools to participate in the field test. This Association was most helpful through Dr. Ted Cooper in supporting the establishing of relationships with counselors in the area. The five high schools can be described as follows:

School A - A large comprehensive high school in a suburb of approximately 95,000 persons to the north of Chicago. The student body is racially mixed and approximately 85% to 95% of the students go to college.

School B - A large comprehensive high school in a suburb to the north of Chicago with a population of approximately 30,000 persons. The student body is predominantly white of mixed religious background and approximately 85% to 90% of the students go to college.

School C - A large comprehensive high school in a community northwest of Chicago with a population of approximately 17,000 persons. This high school is in the same district as School B, but it is newer and smaller and serves a more homogeneous neighborhood than School B. The student body is white and 90% to 95% of the students have college aspirations.

School D - A small private school north of Chicago which serves the North Shore area. The student body comes from a higher socio-economic background than the students in the public high schools in the sample.

School E - A parochial high school for boys on the South Side of Chicago. Boys who attend this high school come from a somewhat lower socio-economic background than the students in the rest of the sample.

The project director met with the college admissions counseling staff of each school several times before the delivery of the prototypes to the schools. An agreement was reached with each group to use the devices in as variable a manner as possible and to avoid upsetting the usual routines of the school in collecting the data. Because of the practice in each school of initiating the college selection process at the beginning of the junior year, the project director decided to concentrate the data collection at this level. Arrangements were made with each of the high schools involved to collect from the junior class at each high school the information represented by the form given as Appendix 5 and the form given as Appendix 6. Juniors were asked to rank the items on Appendix 5 on a scale from 1 to 12 in order of their importance to the student in choosing a college to attend. They were then asked to mark the characteristics given on Appendix 6 which they felt were important to them in choosing a college to attend. These two response instruments were given to the Juniors before they were offered an opportunity to use the College Suggestor.

During the months of November and December the prototypes were delivered to the schools. No school received less than 40 nor more than 50 of the devices. The number was determined by the project director and the counseling staff depending upon the number of students and the number of counselors involved in college admissions counseling. Each counselor was given a device and devices were placed in the library and in the learning laboratories for independent use. The criteria involved in determining placement were those which related to providing the most immediate access for students who wanted to use the system, providing a sufficient number for the counseling staff to use them with small groups of students or in conferences with individual students.

During the school year from December, 1967 until late in May, 1968, the College Suggestor was used in the high schools by students in a variety of use situations. Some students took the device home and used it with their parents. Some used it almost exclusively without guidance. Others used it with their counselors. No attempts were made to control the use of the device, and many students used it in several different ways. Students were encouraged to use the system in any way which would help them find information about colleges which interested them. A record of card use was kept by having the student check a characteristic sheet (Appendix 6) to indicate the characteristics which were of interest before the cards were taken from the deck. These sheets were kept by the counselors or by the person who checked out the device to the student and were collected by the project director every two weeks. The project director visited each high school at least twice a month and, in many instances, once a week to meet with the counselors to discuss any problems which they might be having with the device. One immediate problem which appeared was the lack of adequate instructions for independent use. The directions given in Appendix 4 were prepared by Dr. Walton and issued with each device. At School A, a 16 minute video-tape was prepared by the project director and the director of college admissions counseling to be scheduled through the video system available to students at the school. This tape was prepared through funds available in a Title III project at the school.

Beginning in May, 1968 data was collected from the counselors and the student users through the use of the forms given in Appendix 7 and Appendix 8. Appendix 7 represents a College Suggestor reaction sheet for students which was filled out by the students using the device. Appendix 8 represents a College Suggestor reaction sheet for the counselors involved in the study. The following summary presents a chronology of the data collection.

(1) September and October, 1967 - Responses obtained from the Juniors on the reaction instruments given in Appendix 5 and Appendix 6. On the former the characteristics which interested the student the most were checked. On the latter, the areas of classification for the characteristics were ranked.

(2) November and December, 1967 - The College Suggestor was introduced to students and counselors at the five high schools in the study.

(3) January through May, 1968 - The College Suggestor was used by the students and counselors.

(4) May and June, 1968 - Students who used the College Suggestor were asked to respond to the reaction sheet given in Appendix 7 and the counselors were asked to respond to the reaction sheet given in Appendix 8.

In addition to the above sources of data for the evaluation, the project director inteviewed groups of students who had used the College Suggestor and discussed with them the desirable and undesirable aspects of the system which they associated with their own uses.

The tabulation of the data was initiated during the month of August. This was done by hand count since the project budget did not provide for the transfer of the data to IBM cards for counting. The statistical procedures involved a tabulation of the number of responses and the translation of these into percentages of the total number of responses.

The counselors involved in the study were all given packets containing the characteristics sheet (Appendix 6) and a sheet of directions (Appendix 10). The students were also given instruction sheet the first time they obtained the College Suggestor for use. These directions are given in Appendix 11. In addition, a review of the use of the device was made with the counselors at the midpoint of the study. The communication contained in Appendix 12 represents a summary of this review which was given to all the counselors. The comments concerning the design of the prototype which are reflected in Appendix 11 and Appendix 12 will be expanded in the discussion of the results which appears below.

Results

(a) The Characteristics:

The results of that portion of the study dealing with the evaluation of the characteristics is found in Tables I through VI. Tables I through V present the results of the tabulations of the information requested in Appendix 5. The sample responding consisted of male and female students at the Junior year in the five high schools described above. Table V represents only male responses since it digests data obtained from a parochial school for boys. These data were obtained from the students before they were introduced to the College Suggestor and at a time when they were beginning their formal activities at the high school relating to meeting with college representatives and working with counselors on their college admissions problems. Tables I through V present the average rankings given by the students at each high school in response to the characteristic groups which were presented to them. They were asked to rank only those groups which they felt were important to them in making a decision about a college to attend. The percent of students responding to the item gives an index of its overall usefulness as a category of importance to the student. The consistency of response from one school to another is apparent from an examination of the tables as is the similarity between male and female responses. Females tended to indicate less concern for admission requirements and to rank fewer items than the males. Otherwise, the relative importance of the items was the same for males as for females. An examination of the tables indicates that, for both males and females, Major fields of study and admission requirements represent the characteristic areas with the greatest potency. These areas are followed by a middle grouping consisting of the location of the college and the type of college, together with cost factors. The size of the student body and the characteristics of the student body together with the availability of financial aid constitute a third grouping of slightly less importance than location, type, and costs. Characteristics of the faculty should be included in this middle grouping, although the lack of a response to the specific characteristics concerning faculty on the form given in Appendix 6 suggests that the students may have been thinking of characteristics such as warmth and availability rather than degree status. The least potent areas are shown on Tables I to V to be the availability of vocational and technical programs, the type of extra-curricular activities, and the type of living accomodations. The location of the college appears to be a more important variable to a parochial school population than to students in a public or a private high school. The percentage of response was generally lower for females than for males , indicating that they did not rank as many items as the males. The pattern of response represented by School D does not parallel the response patterns of the other schools as their patterns parallel each other. The small number of students, together with the homogeneity of the population, probably accounts for this variation. The students in School D, a private school, seem less concerned with such factors as costs and financial aid, as indicated by the low level of student response. In general for all schools, a lower level of response can be interpreted as less interest in the characteristic even though the ranking might be higher than other rankings. In some instances, the few students who did respond to an item did so by indicating that it was important for them.

Table VI presents some information on the primacy of individual characteristics. These data are taken from the responses of the students made at the time of the responses to Appendix 5. The students were asked to indicate on the form given in Appendix 6 the characteristics which they would be most important

TABLE I

Average Rankings and Percentage of Sample Response To Inquiry Concerning the Primacy of Characteristic Groups

	School A			
	N = 378		N = 306	
	Males	% Response	Females	% Response
Location of college	4.4	89%	4.0	83%
Characteristics of faculty	5.1	62%	5.7	50%
Size of student body	5.7	65%	5.4	63%
Characteristics of student body	5.8	58%	5.4	55%
Admission requirements	2.9	87%	3.1	79%
Type of college	4.9	58%	4.9	55%
College costs	4.1	75%	4.1	67%
Type of living accommodations available	6.4	57%	6.9	50%
Availability of financial aid	5.9	53%	5.9	39%
Major fieldsof study	2.3	93%	2.5	80%
Availability of vocational and technical programs	7.1	39%	7.0	29%
Type and extent of extra-curricular activities	6.8	53%	6.9	55%

TABLE II

Average Rankings and Percentage of Sample Response To Inquiry Concerning the Primacy of Characteristic Groups

	School B			
	N = 198		N = 186	
	Males	% Response	Females	% Response
Location of college	4.2	79%	3.6	76%
Characteristics of faculty	5.5	52%	5.0	43%
Size of student body	5.6	63%	5.9	54%
Characteristics of student body	5.3	49%	5.4	41%
Admission requirements	2.7	76%	3.0	72%
Type of college	4.8	61%	4.5	51%
College costs	4.6	51%	4.0	58%
Type of living accommodations available	6.7	45%	6.6	49%
Availability of financial aid	6.2	42%	5.8	26%
Major fieldsof study	2.6	87%	2.2	82%
Availability of vocational and technical programs	7.4	33%	7.1	19%
Type and extent of extra-curricular activities	6.2	48%	6.5	52%

TABLE III

Average Rankings and Percentage of Sample Response
To Inquiry Concerning the Primacy
of Characteristic Groups

	School C			
	N = 138		N = 94	
	Males	% Response	Females	% Response
Location of college	4.7	81%	4.2	72%
Characteristics of faculty	5.7	53%	5.5	58%
Size of student body	5.9	58%	5.1	61%
Characteristics of student body	5.4	51%	5.9	48%
Admission requirements	2.8	76%	2.6	67%
Type of college	5.2	60%	4.6	51%
College costs	4.1	69%	4.6	70%
Type of living accommodations available	6.2	46%	7.0	36%
Availability of financial aid	5.6	54%	5.4	22%
Major fields of study	2.2	84%	2.8	78%
Availability of vocational and technical programs	7.6	28%	7.3	16%
Type and extent of extra-curricular activities	6.1	49%	6.0	42%

TABLE IV

Average Rankings and Percentage of Sample Response
To Inquiry Concerning the Primacy
of Characteristic Groups

	School D			
	N = 52		N = 41	
	Males	% Response	Females	% Response
location of college	4.8	48%	3.6	49%
Characteristics of faculty	4.2	39%	4.8	29%
Size of student body	4.1	42%	4.4	46%
Characteristics of student body	5.2	42%	4.5	36%
Admission requirements	2.5	64%	3.3	58%
Type of college	3.9	26%	4.8	22%
College costs	4.5	38%	4.9	15%
Type of living accommodations available	6.8	18%	6.3	20%
Availability of financial aid	5.6	08%	5.1	18%
Major fieldsof study	2.1	89%	2.6	72%
Availability of vocational and technical programs	6.7	11%	7.8	08%
Type and extent of extra-curricular activities	5.3	35%	5.3	43%

TABLE V

Average Rankings and Percentage of Sample Response To Inquiry Concerning the Primacy of Characteristic Groups

	School E N = 196 Males	% Response
Location of college	3.8	72%
Characteristics of faculty	5.9	47%
Size of student body	5.8	41%
Characteristics of student body	6.2	46%
Admission requirements	3.3	52%
Type of college	4.7	34%
College costs	4.0	59%
Type of living accommodations available	6.4	42%
Availability of financial aid	5.3	55%
Major fields of study	2.9	84%
Availability of vocational and technical programs	6.2	39%
Type and extent of extra-curricular activities	5.8	44%

in making a decision about a college to attend. Table VI presents those characteristics which were checked by ten percent or more of the sample. The average number of characteristics checked was 21. Since no request was made for the students to check only one characteristic in each area, the responses produced data which is best interpreted in terms of percent of students indicating an item. The two most frequently indicated items were 74 and 107. This suggests that most of the students were thinking about a coeducational university setting for college attendance. No characteristic was omitted completely in the total response and the most frequent item, 74, was given by only 55% of the respondents. The pattern of characteristic use parallels the data contained in Tables I through V. The most frequently used group of characteristics were those indicating majors. Exclusive of degree majors, those characteristics which were chosen by twenty percent or more of the sample are as follows: 74,107,1,3,8,12,26,32,33,39,59,75,77,96,and 97.

An examination of Tables I through VI suggests that students are, as one would expect, conditioned by their secondary school experiences and their home environment to be sensitive to such factors as admission requirements and courses of study at universities. In addition, the location of the college appears to be an important factor. Students appear to be more concerned with the personal and social atmosphere of the college than with its intellectual climate, and women tend to be less concerned about financial aid men. The cost of a college is important with both men and women tending to think in terms of a total cost figure rather than just tuition. The coeducational nature of the institution seems to be important for this sample as does the size of the institution. Students tend to think in terms of either public or private schools and to think in terms of what is required for admission rather than what is not.

(b) The device:

Tables VI and VII present data relative to the evaluation of the device. Table VI represents student opinion samples concerning the use of the College Suggestor

TABLE VI

Characteristics Chosen By Ten Percent or More of Sample[1]

N = 1,624

Location

1,3,6,8,10,12

Size

16,17,18

Control

19,21,23

Prerequisites

26,28,30,31,32,32

Admissions Information

36,37,38,39,44

Costs

54,55,56,58,59,60

Financial Aid

66,68,73

Program

74,75,77,82,83,88,89,
93,94,96,97

Characteristics of Student Body

107,109,110,114,115,118,
119,132,137,138,139

Characteristics of Faculty

Degree Majors Available

150,151,152,153,159,
160,163,164,165,166,
167,168,169,171,173,
177,178,180,181,182,
183,184,185,188,189,
190,191,192,193,195,
198,200,202

Occupational Programs

207,213,214,215

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[1] See Appendix 1 for explanation of characteristic number.

and Table VII represents a sample of counselor opinion. The evaluation of the device was done through the use of the two instruments given in Appendix 7 and Appendix 8. Twenty-two counselors were involved in the counselor student use of the College Suggestor. Of these, only three indicated that they thought the use of the device was a waste of time. The counselors felt that the device was of sufficient value to merit its use with students as a way of introducing the problem of college choice. Their perceptions of the relative importance of areas paralleled that of the students. The counselors indicated that they had used the areas of majors and admissions requirements most frequently with students. Between 25% and 75% of the time they had used the characteristic cards in the areas involving location, cost, prerequisites for admission, and financial aid. The cards for occupational and technical programs and characteristics of the faculty were used the least.

Over ninety percent of the students were supportive in their comments about the device. The students used the device in two ways. The most frequent use was to check on already existing choices. This was done by taking the characteristic cards and seeing if a particular college would turn up. Many students indicated that they did locate the names of colleges which were new to them through the use of the College Suggestor. One enterprising group of boys studied the colleges of the college representatives several days before the representative was to arrive at the high school in order to ask him detailed questions about his college. Approximately 80% of the students reported that they had found the device useful to them in helping them identify more colleges to investigate and in helping them broaden their understanding of the colleges in which they were already interested.

Both counselors and students were critical of the basic design of the device. They indicated that some design features made the cards difficult to handle. The size of the aperture which allowed the light to shine through the card was too small for many students and counselors and restricted the number of cards which could be used at one time to about eight. For this reason, the average number of characteristics used by students in entry into the system was six.

TABLE VII

Representative Evaluation Statements From Students Who Used the College Suggestor

Number of students using the College Suggestor at least once = 423

"It is fine if you are planning on going to a libral arts school."

"The idea is good but the mechanics of it are difficult."

"I learned more of colleges I had in mind, and I learned of colleges which I could go to which I had thought would be of no value to me."

"Helpful, a great time saver; it picked out the colleges I may want to go to."

"It helps locate a college with speed."

"Very worthwhile if used correctly"

" There should be a better holder to align the sheets."

"I think it is worthwhile if it could be made easier to work."

"It's good only insofar as the statistics about the college. I want to know also a little about what the campus offers and what it looks like."

"It's good for suggesting a lot of colleges I probably never would have looked at."

"I think it is a very useful guide for the student that is not quite sure about which college is best suited for him."

"Very good but holes are too small and hard to line up."

TABLE VIII

Representative Comments From Counselors About the College Suggestor

The physical design and portability of the College Suggestor has permitted students to use it anywhere in the Center or take it home for overnight use with parents. However, the construction of the plastic lecturn could be improved to survive the rigors of overnight use. I would suggest that it be molded as one unit so there would be no parts to come loose with repeated handling. The stacked plastic sheets could also be read more readily if a light source could be built into the lecturn.

One of the greatest impediments to student use has been the lengthy instructions for use of the suggestor. The student becomes discouraged before he even begins to work with the vast number of characteristics provided.

Students have commented very favorably about the organization and clarity of the manual which accompanies the suggestor giving the name and location of colleges.

In general, the College Suggestor is excellent. Certain cards, i.e., 50 thru 56 need to be re-made every 6 months and redistributed to users that often. Cards 36, 37, 38, 47 become out-dated verys quickly, since the words recent years are meaningless in the rapidly changing admissions picture.

I/m really very enthusiastic about the Suggestor - I think it has real potential - but it must be kept from becoming an historical guide to colleges.

TABLE VIII (continued)

Mechanical criticisms include:

1. Rack to hold sheets not substantial enough (three broke under normal conditions.)

2. An inexpensive carrying case to hold both the rack and cards is necessary if materials are to be checked out overnight.

3. Unit needs a built in light source---- room or window illumination is not sufficient.

Students complain that the:

4. Numbers on sheets are too small even when they have normal eyesight.

Instructional Criticisms include:

1. Complaints about the sheer bulk of material with the Suggestor. It takes at least one Mod to read through the instructions and and begin to select sheets from the Categories.

2. Some students were confused by the number of Choices offered to them. One said that he would prefer to get that detailed with assistance from a Counselor.

Students were enthusiastic about a tool to help them with the "Problems of College Choice." Even though they might voice a complaint they feel that this type of tool is a definite asset.

-Wide variety of choices good

-Many selections factors expanded some students awareness of points to be considered in choosing a college

-The multiplicity of factors confusing to students - discouraged many from actually using it

-If going to use religion, need to be specific (Jewish students kept turning up Catholic colleges)

Approximately fifteen percent of the students reported some difficulty in using the device because of the precision needed in lining up the cards. In addition, others reported difficulty in reading the cards which were printed in lighter inks. The lack of an adequate light source with the viewer was frequently mentioned as a problem.

Many students felt that the system contained too much information. They reported some confusion in having to make choices from the 217 characteristics without their being organized in groups. The counselors reported also their concern with too much information for a system which is design to expedite the entrance of the student into college search activity. Some counselors suggested that the characteristics be organized differently, i.e.; that the location cards be by state rather than by region. Several counselors and students wanted to be able to locate characteristics on the basis of the name of the college as rapidly as they could locate colleges for a given characteristic.

(c) Discussion:

The data presented here in Table form, and the assessment of opinions of counselors and students clearly indicate that the two major objectives of the investigation were accomplished. The 217 characteristics included in the College Suggestor system were judged by the students and the counselors to be a useful and comprehensive organization of information about colleges which could be used to expedite the identification of colleges of interest for the purpose of studying these colleges in depth through catalogues and other sources. The variability of the characteristics relative to their primacy in the interest patterns indicate that the traditional patterns of concern are dominant. Majors available, admission information, location, and cost were the areas which counselors indicated in the planning sessions would probably emerge as having high interest value. The variability between the parochial population and the private school population suggests that the primacy of the characteristic areas is a function of the needs of the pupulation and not the function of a stereotyped externalized need structure which the student accepts without question. The indication of some counselors and students that the characteristics represented too much information does not argue against the usefulness of the characteristics. Such an observation only suggests that the characteristics need to be organized in such a way that their usefulness is congruent with the needs of the user. Perhaps a limited edition of the College Suggestor for students with a complete version for the counselor would be one way to maximize this usefulness.

Many counselors indicated in their conferences with the project director that the College Suggestor system had advantages over other systems which depended upon the student's filling out a questionnaire and mailing it away for a list of colleges of "best fit" to the interests represented by the questionnaire responses. The counselors liked the concept of an information system which the student could use for immediate data retrieval and which could be consulted again and again as each use generated further questions to be answered. For this reason, its use should be enhanced by the information it contains. If one bit of information were used by a student only once in the course of a year, that availability would have satisfied the student's quest. The problem of organization relates, not to the gross amount of information, but rather to the problem of packaging the information for multiple uses.

The second objective, that of the evaluation of the device itself, has produced data both in favor of the device as a variable hand-sort system for data retrieval and critical of the present design of the device. The design criticisms relate to the lack of ease experienced by most users in getting used to lining the cards up for coincident reading. These design problems have all been shown by Mr. Roger Marshall, the technical consultant on the project, to be factors which can easily be corrected. Many of the design problems would have been identified had we been able to produce a small number of the prototypes for a trial run before entering the final production stage. Most counselors and students who were critical of the design problems indicated support for the system as an informational retrieval technique.

With specific reference to the questions listed in the section of this report under "Objectives" the following observations are offered:

(1) Approximately one-fourth of the student users indicated that they located colleges through the College Suggestor which they had not considered before. Whether these students actually attend one of these colleges is outside the scope of this investigation; however, the College Suggestor did provide a mechanism for extending the range of possible choices for these students.

(2) The data contained in Tables I through VI suggest that the most frequently used characteristics were those relating to major fields of study available and to admission information and requirements. The least used characteristics, for the sample of students involved in this study, were those relating to technical and occupational programs and the degrees held by faculty.

(3) Students indicated that an expanded list of majors available to include some of the more esoteric, such as exotic languages, would be useful. Some counselors suggested that the location of colleges be classified differently. Some students and counselors would like to see more statements about the college environment. The fact that the characteristics list relates to the libral arts orientation of the college leaves out of consideration many professional schools within universities. The system as it is now organized is more responsive to the offerings of the undergraduate arts and sciences college than to the offerings of the multi-versity.

(4) The most useful characteristics for student use appear to be the major fields of study.

(5) Independent use of the system was most frequent in those high schools where the organization of the school allowed free time for independent use. No data emerged to indicate that independent use as opposed to counselor-student use was most effective, or vice-versa. One problem mentioned by students and counselors was the initial difficulty of getting into the system without some instructional assistance. Once the student had used the system he appeared to be able to engage in independent use

quite effectively.

(6) Both students and counselors indicated overwhelming support for the presentation of this type of data about colleges in the format offered by the College Suggestor. Both groups agreed that providing information about colleges in a system which would allow for immediate, individualized retrieval was quite desirable. The counselors felt that such a system would allow them to concentrate on those problems of college admissions which are more interpersonal in nature.

(7) Both students and counselors reacted favorably to the type of data retrieval system represented by the College Suggestor, although they were both critical of the design of the present system.

One aspect of this investigation which was a result of the interest shown nationally in the system and its use was the amount of time spent by the project director in disseminating information about the system. Papers were delivered at two national meetings, and the project director answered some two hundred-fifty inquiries about the device and the evaluation, and meet with representatives of companies interested in similar systems. Appendix 14 presents the names of companies involved in various systems of support for college admissions counseling. The majority of these companies have emerged during the last four years. The importance of information about colleges to companies such as these, and to the system described in this report, cannot be underestimated. All college admissions support systems depend upon relevant data which must be up-dated periodically. To date, no central source of up-dating for this information exists outside the information schedules collected periodically by the Office of Education.

Conclusions and Recommendations

An examination of the data reported by this investigation, both subjective and objective, supports the following conclusions:

(1) The College Suggestor represents a successful application of the process of optical coincidence to an information retrieval problem in a special field of education, that of college admissions counseling.

(2) The College Suggestor demonstrates the contributions which a technology of education can make to the field of counselor education.

(3) The characteristics constituting the information contained in the College Suggestor system were judged by both counselors and students to be relevant to the needs of students entering the college admissions counseling process.

(4) Some groups of characteristics had higher primacy for the sample used in this investigation than other groups. Major fields available and admissions information represented a high primacy which occupational and technical programs had low primacy.

(5) Males and females, with minor variation, appear to exhibit the same interest patterns with respect to the type of college characteristics represented by the College Suggestor system.

(6) Variation in the primacy of characteristics is a function of the type of high school and the students who attend.

(7) The design of the present prototype of the College Suggestor needs to be changed to make the cards easier to handle in seeking the information they represent.

(8) The evaluation of the College Suggestor represented an activity which stimulated the involvement of the counseling staff in the high schools in the examination of their college admissions practices. Counselors reported that they welcomed the use of such systems as a way of stimulating independent search activity on the part of students.

Two recommendations emerge as a result of the activities delineated in this report:

(1) The recommendation is made that users of the College Suggestor consider a revised version which would consist of a student version and a counselor version. The student version would consist of degree majors, admission information, location, cost, and financial aid. The counselors version would consist of the complete system.

(2) The recommendation is made that the Office of Education promote the ongoing activity of technological support for college admissions counseling by establishing some mechanism for the periodic collection and updating of information such as that contained in the College Suggestor. Such systems of support depend entirely for their relevancy on the recency of the information they contain. No one source of data now exists for this type of information.

APPENDIX 1

OE Project No. 6-1889

Instructions

The College Suggestor pages are listed below. Page number and characteristic title are shown. Select the pages in which you are interested, withdraw them from the deck, stack them and read off the numbers printed in the rectangles where you see light clear through the stack. The numbers you read correspond to those colleges or universities which have the characteristics which you have chosen.

A list of institutions with their College Suggestor reference numbers appears after the list of pages. Each institution has a four digit identification number. Two digits appear on the left side and two on the right side of the rectangle which constitutes an institution location on the College Suggestor grid. For example, 05 11 is the College Suggestor number for Northwestern University, Evanston, Illinois; or 12 31 is the number for Bard College, Annandale-on-Hudson, New York.

The College Suggestor pages must be accurately superimposed for correct readout. Unless you properly refile the pages you withdraw when you are finished the College Suggestor cannot be helpful to the next user.

Gaps in the College Suggestor name list relate to religious institutions or to colleges which have closed or combined.

College Suggestor Characteristics

No. *Characteristic*

LOCATION

1 Location in New England
2 Location in The Middle Atlantic States
3 Location in The Great Lakes States
4 Location in The Plains States
5 Location in The Southeast
6 Location in The Southwest
7 Location in The Rocky Mountain States
8 Location in The Far West
9 Located in A Suburb of Metropolitan Area of 100,000 or over
10 Located in A City, 500,000 or over
11 Located in A City, not a Suburb, 50,000 to 500,000
12 Located in A City or Town of 10,000 to 50,000
13 Located in A Town of less than 10,000

SIZE

14 Enrollment is Below 600
15 Enrollment is Between 600 and 999
16 Enrollment is Between 1000 and 2499
17 Enrollment is Between 2500 and 9999
18 Enrollment is 10,000 or more

CONTROL

19 Control of College by State or Federal Agency
20 Control of College by Local Government
21 Control of College by Independent Non-Profit Body
22 Control of College by Independent Proprietary Body
23 Affiliation of College with Roman Catholic Church

No. *Characteristic*

24 Affiliation of College with Religious Group other than Roman Catholic

PREREQUISITES

25 Twelve or more Secondary School Units Required
26 Fifteen or more Secondary School Units Required
27 Academic Course of Study in Secondary School not Specified
28 Prerequisite of Four Years English
29 Prerequisite of Three Years of English
30 Prerequisite of at least Two Years Foreign Language
31 No Foreign Language Prerequisite
32 Prerequisite of at least Two Years Mathematics
33 Prerequisite of at least One Year Laboratory Science
34
35

ADMISSION INFORMATION

36 An Admissions Test is Required
37 Over Sixty Percent of Qualified Applicants were Offered Admission in Recent Year
38 Over Sixty Percent of all Applicants were Offered Admission in Recent Year
39 Admissions Decisions made on Rolling Basis
40 Early Admission Granted when Appropriate
41 Early Decisions made in Appropriate Cases
42 Freshmen Admitted other than in the Fall
43 Transfers Admitted other than in the Fall
44 Will Consider Applicants from Lower Half of Graduating Class under certain Circumstances

No. *Characteristic*

45 Will Consider Non-High School Graduates when Circumstances Warrant
46 Summer Trial Session Available for Promising Applicants
47 Admission Applications Received Prior to February
48 Admission Applications Received Prior to April
49 Admission Applications Received Through July

COSTS

50 Tuition and Fees for out of State Students under $500
51 Tuition and Fees for in State Students under $500
52 Tuition and Fees under $600
53 Tuition and Fees under $800
54 Tuition and Fees under $1,000
55 Tuition and Fees under $1,200
56 Tuition and Fees under $1,500
57 Tuition and Fees over $1,500
58 Tuition, Fees, Room and Board under $1,100
59 Tuition, Fees, Room and Board under $1,600
60 Tuition, Fees, Room and Board under $2,100
61 Tuition, Fees, Room and Board under $2,600
62 Tuition, Fees, Room and Board under $3,100
63 Tuition, Fees, Room and Board over $3,100

FINANCIAL AID

64 Offers Four-Year Guaranteed Tuition Base
65 Institution has College Work-Study Program
66 Adequate Opportunity Available for Off-Campus Employment
67 Average Earnings for Undergraduate Jobs $300 or more per year

No. *Characteristic*

68 More than half the Freshman Class has been Receiving Financial Aid in recent Years

69 More than One Fourth the Freshman Class has been Receiving Financial Aid in recent Years

70 Less than One Quarter the Freshman Class has been Receiving Financial Aid in recent Years

71 Average Student Award, Including Single and Packaged Aids, has Recently run $100 to $499

72 Average Student Award, Including Single and Packaged Aids, has Recently run $500 to $999

73 Average Student Award, Including Single and Pacaged Aids, has Recently Exceeded $1,000 per year

PROGRAM

74 Type of Academic Program: University

75 Type of Academic Program: Liberal Arts College

76 Type of Academic Program: Fine Arts College

77 Type of Academic Program: Technological College

78 Type of Academic Program: Theological or Religious College

79 Type of Academic Program: Teachers College & Liberal Arts and Teacher Education

80 Type of Academic Program: Junior College

81 Type of Academic Program: Sub-Baccalaureate Technical and Semi-Professional

82 Certification Program Offered in Secondary Education

83 Certification Program Offered in Elementary Education

84 ROTC Required

85 Air Force Reserve Officer Training Corps Program Available

86 Army Reserve Officer Training Corps Program Available

87 Navy Reserve Officer Training Corps Program Available

88 Formal Counseling Services Available for Undergraduates

89 Departmental Honors Programs Available

90 Advanced Placement given for College Level Work Completed in Secondary School

91 College Credit given for College Level Work Completed in Secondary School

92 College Credit and/or Advanced Placement given for College Level Work on Basis of an Examination

93 Independent Study Courses Available

94 Formal Program Available for Study Abroad

95 Baccalaureate Requirement may be met in less than Four Years

96 Campus Orientation Inclines Toward Liberal Arts Emphasis

97 Campus Orientation Inclines Toward Technical/Scientific Emphasis

98 Campus Orientation Inclines Toward Occupational/Pre Professional Emphasis

No. *Characteristic*

99 Cultural Activities (Concerts, Plays, Art Exhibits, Etc.) Readily Available by Frequent Public Transportation

100 Cultural Activities (Concerts, Plays, Art Exhibits, Etc.) Center Mainly on Campus

101

102

103

104

CHARACTERISTICS OF STUDENT BODY

105 Student Body all Women

106 Student Body all Men

107 Student Body Coeducational or Coordinate

108 Student Orientation Inclines Toward the Scholarly & Intellectual

109 Student Orientation Inclines Toward Social and Personal Development

110 Student Orientation Inclines Toward Congeniality

111 Student Orientation Inclines Toward Practicality

112 Over Forty Percent of Class Recently Enrolled Graduated in Top Fifth of Secondary School Class

113 Over Twenty Percent of Class Recently Enrolled Graduated in Top Fifth of Secondary School Class

114 CEEB Mean Score for Recent Freshman Class on Verbal Section of SAT was over 400

115 CEEB Mean Score for Recent Freshman Class on Verbal Section of SAT was over 500

116 CEEB Mean Score for Recent Freshman Class on Verbal Section of SAT was over 600

117 CEEB Mean Score for Recent Freshman Class Section of SAT was over 650

118 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 400

119 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 500

120 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 600

121 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 650

122 ACT Mean Composite Score for Recent Freshman Class 12 or over

123 ACT Mean Composite Score for Recent Freshman Class 16 or over

124 ACT Mean Composite Score for Recent Freshman Class 21 or over

125 ACT Mean Composite Score for Recent Freshman Class 26 or over

126 As many as One Fourth Women Graduates Enter Graduate Study

127 As many as One Half Women Graduates Enter Graduate Study

128 As many as One Half Men Graduates Enter Graduate Study

No. *Characteristic*

129 More than One Fourth Men Graduates Enter Graduate Study

130 Less than Twenty Percent Total Enrollment are Graduate Students

131 Forty Percent or more belong to Social Fraternities or sororities

132 Seeks a Geographically Diverse Student Body

133 More than One Half of the Student Body Commuting Day Students

134 No Residential Facilities Available

135 Residential Facilities on Campus for Women only

136 Residential Facilities on Campus for Men only

137 All or almost all Residential Facilities are on Campus

138 Fraternities have Housing Facilities

139 Sororities have Housing Facilities

140 Over Sixty Per Cent of a Recent Freshman Class Returned the Second Year

141 Over Eighty Per Cent of a Recent Freshman Class Returned the Second Year

142 Half or more Men Graduates from these Junior Colleges go on for Higher Education

143 Half or more Women Graduates from these Junior Colleges go on for Higher Education

CHARACTERISTICS OF FACULTY

144 More than Half the Faculty Members have their Doctorates

145 More than One Fourth the Faculty Members have their Doctorates

146 More than Three Fourths the Faculty Members have Advanced Degrees

DEGREE MAJOR AVAILABLE IN

147 Agriculture: General

148 Agriculture: Agronomy; Food Technology; Horticulture; Husbandry; Management of Farm, Dairy, Wildlife; Soils

149 Architecture

150 Biological Sciences: Biology, General

151 Biological Sciences: Botany or Zoology, General

152 Biological Sciences: Premedical, Pre-dental, Preveterinary, Optometry (Pre-Professional)

153 Biological Sciences: Anatomy, Bacteriology, Entomology, Genetics, Nutrition, Physiology, Plant Pathology, Plant Physiology

154 Biological Sciences: Biochemistry, Biophysics

155 Business and Commerce: General

156 Business and Commerce: Accounting

157 Business and Commerce: Hotel and Restaurant Administration

158 Business and Commerce: Secretarial Studies

159 Education: Nursery, Kindergarten, Early Childhood, Elementary

160 Education: Secondary, Combined Elementary & Secondary

No.	Characteristic
161	Education: Fine & Applied Arts (Art, Business & Commerce, Home Economics, Music, Physical, Recreation, Health, Industrial & Industrial Arts, Agriculture, General)
162	Education: Exceptional & Atypical, Speech Correction
163	Engineering
164	English, Literature & Journalism
165	Fine and Applied Arts: General
166	Fine and Applied Arts: Art
167	Fine and Applied Arts: Music
168	Fine and Applied Arts: Speech & Dramatic Arts
169	Foreign Languages: General, Linguistics, Philology
170	Foreign Languages: Classical, Oriental, Exotic (Greek, Latin, Chinese, Hebrew, Hindu, Japanese, Urdu)
171	Foreign Languages: Modern (French, German, Italian, Portuguese, Russian, Spanish)
172	Forestry
173	General Program of Studies: Arts & Sciences
174	Geography
175	Health Professions: General, Chiropody, Dental Hygiene, Hospital Administration, Occupational Therapy, Public Health
176	Health Professions: Medical Technology, Radiologic Technology
177	Health Professions: Nursing or Public Health Nursing
178	Health Professions: Pharmacy
179	Health Professions: Physical Therapy
180	History
181	Home Economics: General
182	Home Economics: Child Development, Clothing & Textiles, Foods & Nutrition, Institutional Management, Family Relations
183	Law
184	Library Science
185	Mathematical Subjects: Mathematics and Statistics
186	Military, Naval or Air Science; Merchant Marine Deck Officer
187	Philosophy, Scholastic Philosophy
188	Physical Sciences: General
189	Physical Sciences: Chemistry, Pharmaceutical Chemistry
190	Physical Sciences: Physics
191	Physical Sciences: Earth Sciences (General, Geology, Geophysics, Oceanography)
192	Physical Sciences: Astronomy, Metallurgy, Meteorology
193	Psychology
194	Religion: General & Liberal Arts, Religious Education, Theology
195	Social Sciences: General
196	Social Sciences: American Civilization
197	Social Sciences: Anthropology
198	Social Sciences: Economics
199	Social Sciences: International Relations, Area & Regional Studies
200	Social Sciences: Political Science or Government
201	Social Sciences: Sociology
202	Social Sciences: Applied (General, Agricultural Economics, Foreign Service, Industrial Relations, Public Administration, Social Work)
203	Trade and Industrial Training

OCCUPATIONAL PROGRAMS AVAILABLE IN

204	Agriculture and Forestry
205	Aeronautical Technology
206	Chemical Technology
207	Civil and Architectural Technology
208	Electrical and Electronic Technology
209	Industrial, Mechanical and Instrumentation Technology
210	Health Services
211	Scientific Data Processing
212	Business and Commerce
213	Education
214	Journalism
215	Applied, Fine and Graphic Arts
216	Home Economics
217	Library Technology
218	Bible Study
219	Fire Protection and Police Technology

APPENDIX 2

OE Project No. 6-1889

1. General - Two color printing, black and a second color, both on back of Kodacel TA 401 stable base plastic .005 inch or thicker. Colored inks minimally translucent, black ink opaque. Print twenty up, eleven runs each run using a different second color, 220 pages in all. Each page 8 1/2 by 10 3/4". Separation cuts with high precision. Running die cut tabs. Sequential collation in tab order into sets. Sets boxed. Boxes packaged. Quantity: 300 sets.

2. Quality Controls - We are greatly concerned about quality control. At least a spot check would seem desirable to assure true registration of the printing, clean cuts of plastic sheets, acceptable coincidence of apertures, etc. One possibility would be to establish a control step after collation of sets to assure that control apertures show light. Comments and recommendations as to procedure to follow in controlling quality would be appreciated.

3. Black Ink Run - Includes sequence numbers, headers, trailer, grid, number array. Precision alignment of all elements, precise verticality of grid, precise placement of number array inside grid all very important. Films for platemaking to be supplied for all elements.

4. Colored Ink Runs - Pages are sequenced in accordance with tab numbers in ascending order and in twenty page blocks. (See Tab A.)

Eleven different hues, preferably pastels with high brilliance, low saturation. Ink colors to be approved by Tanaka, ETS.

Pages	1-20	0100-0301
	21-40*	0302-0504
	41-60	0505-0610
	61-80	0611-0806
	81-100	0807-0826
	101-120*	1200-1215
	121-140	1216-1232
	141-160	1235-0913
	161-180	0914-0935
	181-200	0936-0955
	201-220*	0956-1015

Outer limits of colored ink spread are the outer edges of grid rectangle on left, right, and bottom, 1/8 inch above top of header at top. Tab numbers are to be left in the clear with the following exception:

Inked Tabs - In the case of twelve pages on which new classifications are begun, colored ink or Ben Day should surround

* See special note below in re: pages 34, 35, 101, 102, 103, 104, 220.

the tab number above the main colored ink spread. These pages are shown on Tab A and are as follows:

1
14
19
25
36
50
64
74
105
144
147
204

5. Printing "Holes" - Uninked clear spots ("holes") within the spread is in accordance with master positive films supplied, one for each of 213 pages. Precise registration of "holes" in center of their respective grids. Pages numbered 34, 35, 101, 102, 103, 104, and 220 have neither master arrays of spots, nor headers. These seven pages are to receive solid spreads of color, and in black, the sequence numbers, trailer, grid, number array, but no header.

6. Separation Cuts - Within tolerance of 1/100 inch. Left and bottom edges of the individual pages require precise alignment. Lower left corner must be right angle. Lower edge must be parallel to horizontal axis of the grid. Left edge must be parallel to vertical axis of the grid. Cuts must permit alignment of holes in given grid within same numbered sheets and among different numbered sheets. Use of control apertures to check is suggested.

7. Die Cuts - Cut from right edge of sequencing tab number to right edge of page. (See Tab B.) Trim from top of page to trim line in easy reverse "S" curve with no corners. If both upper left and upper right corners of tabs could be rounded in the same cut, this would be desirable.

8. Manual of Instruction and Codes - Twelve page, self cover, saddle wire book approximately 8 1/2 x 10 3/4". Assume 80 pound Vellum text stock with twelve panals. Suggestion as to use of texolite or other plastic impregnated stock would be appreciated.

   Copy by Walton, ETS, under separate cover. Layout and design by Tanaka, ETS.

9. Collation - 300 sets plastic sheets, pages 1 through 220, inserted in box with self-cover booklet in back.

10. Box - Overall dimension of plastic sheets is 8 1/2 x 10 3/4" including protruding tab. Overall dimension of booklet is 8 1/2 x 10 3/4". Inside dimensions as to width and height should permit fit without too much slack, perhaps 1/8" or 3/16". Thickness of box (inside dimension) not

known, to be determined by you on basis of measurement of thickness of 200 inked plastic sheets stacked plus 12 page 80 pound Vellum text booklet. Expansion space of 1/4" to 3/8" in this inside dimension would be desirable. Details in box design by Tanaka, ETS, and printer. Your suggestions as to approach of box design would be appreciated.

11. Packaging - Wrapped for shipment in convenient sized units, 8-12 boxes per package. Protect with corrugated board and strap.

12. Documentation - Tab A identifies the 220 pages, sets their sequence and contains twenty headers to a page. Each page of Tab A, then, is one color grouping. Note that sequence numbers 34, 35, 101, 102, 103, 104, and 220 are blanks (solid ink). The twelve classifications are also shown on Tab A.

    Tab B illustrates the sequencing of die cuts.

13. Clarification - Questions, resolution of problems, etc. if possible by Roger Marshall, 703-524-7515, otherwise by Wesley Walton, 609-921-9000.

14. Retention - SAVE ALL GRAPHICS.

APPENDIX 3

OE Project No. 6-1889

SUMMARY

of

FINAL REPORT

THE COLLEGE SUGGESTOR

A Data Retrieval Device for Use as a Guide to College Choice

Department of Health, Education, and Welfare

Office of Education

Project No. X-014
Contract No. OE-6-10-147

Submitted by

NORTHWESTERN UNIVERSITY

with the cooperation of

EDUCATIONAL TESTING SERVICE

- Project Director -

B. Claude Mathis

SUMMARY

The development of the College Suggestor, a data retrieval device for use as a guide to college choice, was proposed to the Office of Education during the Spring of 1964 by Northwestern University and the Educational Testing Service. Interest in the development was initiated by the Office of Education through informal conversations between Francis Keppel, then Commissioner of Education, and others on his staff at that time. Northwestern University and the Educational Testing Service submitted a proposal and were funded to accomplish the following objectives:

1. Determine the college and university characteristics which are important to counselors, parents, and students.
2. Collect the desired information about the colleges and universities throughout the United States.
3. Develop one set of reproducible masters of the device which will apply the principle of optical coincidence.
4. Convene an advisory committee to evaluate the activities involved in the development of the prototype and to offer advice and recommendations concerning the use, evaluation, and further development of the College Suggestor.

The narrative which follows delineates the accomplishment of these objectives.

The College Suggestor development seeks to fill a guidance need in education brought about by the increasing pressures in our culture toward college attendance. The College Suggestor is not proposed as a substitute for the personal relationship fundamental to the guidance process; neither does the development propose to define college choice solely in terms of the criteria which can be accommodated in a device such as the College Suggestor. Rather, the device should provide a valuable resource for the counselor and the counselee in identifying those colleges which the college-bound student feels should be investigated in depth.

The College Suggestor is designed to identify colleges and universities meeting certain requirements which conform to the interests and desires of the prospective college student as identified either individually or together with parent or counselor. The device is a card sort system. The cards themselves are transparent plastic underprinted with opaque or translucent inks. Each card represents a single characteristic applicable to colleges and universities (i.e., tuition above or below a certain figure) and contains grid positions for 1,931 colleges and universities represented in the system. Each college has the identical grid position on each card. When the college has present within it the characteristic represented by a specific card, the grid is left clear at that position so that light will shine through. If the college does not have the characteristic, its grid position is made opaque.

To retrieve data from the system, the optical coincidence principle is used. Individual cards are selected by hand representing college characteristics available and of interest. The selected cards are superimposed one on the other. Where positions on the cards are coincident, points of light are visible. The optical coincidence which produces points of light constitutes a match of stored information with respect to a search question concerning colleges with given characteristics. These light dots represent colleges having the selected characteristics in common. At the position of the light dots, reference numbers are available. By referring to a code list one is able to identify by name the colleges which have been turned up as a result of the search.

The College Suggestor is planned for the instant retrieval of information characterizing all junior colleges, colleges and universities. The system identifies all colleges where each of the differentiating characteristics is present. The system can be used either through prior planning of college characteristics regarded to be of interest, or by browsing in order to determine those characteristics which are relevant in a given situation.

In use, a student would identify those characteristics of colleges related to his own abilities, interests and needs. He would do this either with a counselor or as an independent activity. He would select cards from the device descriptive of the characteristics in which he is interested, square off his deck of cards, number those colleges which combine all of the characteristics he has identified as of interest to him.

One of the stronger features of optical coincidence is its browsing mode. If the individual turns up too many colleges, he may add additional characteristic cards; if he feels the need for a larger selection of colleges, he may remove cards representing overly restrictive characteristics which are of secondary importance to him. With a selection of colleges to study in greater detail the student can turn to handbooks, guides, and college catalogues in order to learn enough about the respective institutions to narrow down his choices to the very few to which applications for admission and/or placement will be filed.

The 217 characteristics comprising the information in the prototype model were obtained from Office of Education files plus a questionnaire which was sent to 2,160 junior colleges, colleges, and universities. These 217 characteristics of institutions are grouped according to location, size, prerequisites, admission information, costs, financial aid, program, characteristics of student body, characteristics of faculty, degree majors available, and occupational programs available. Certain colleges do not appear in the system because of their specialized nature. A final universe of 1,931 institutions is represented in the prototype.

One set of reproducible masters has been prepared and is on file at Northwestern University pending production of models for field test purposes. The advisory committee has been convened. At the conclusion of the two day discussion of the project by the committee, during the latter stages of the development of the College Suggestor, the committee unanimously approved the following statements as indicative of their reactions to, and concern for, the project:

> The Committee wishes to express its concern relative to the inclusion of the College Suggestor in the public domain without adequate controls to insure its valid and reliable use within the educational community. The Committee recommends to the Office of Education that some form of licensing agreement be entered into for the distribution of the College Suggestor and that this licensing agreement involve the direct participation of a representative group from the educational community, chartered for the purpose of establishing policies with respect to distribution, use, marketing and revision of the device.
>
> The Committee feels that developments in the College Suggestor project to date are most commendable; however, the project is of sufficient importance to make further development mandatory. A field test and evaluation are imperative to the use of the College Suggestor.

The experiences of Northwestern University, and the Educational Testing Service, together with the advice and counsel of the National Advisory Committee, relative to the development of the prototype of the College Suggestor strongly support the following recommendations concerning the future of the device:

1. It is recommended that authorization for the manufacture of not more than 500 sets of the prototype model of the College Suggestor be issued at the very earliest practicable date, and that funds be allocated for the purpose.
2. It is recommended that subsequent authorization be issued for a field test to involve experimental use of the prototype

models and that funds in part to support these research and development efforts be allocated for the purpose.

3. It is recommended that the Office of Education give serious consideration to a provision for licensing this device in connection with its commercial distribution, and that it evolve a means for enforcing desirable controls through a representative group of educators chartered especially for this purpose.
4. Finally, it is recommended that the Office of Education sensitize itself to the possible commercial exploitation of the College Suggestor and to the special need for protecting the potential users of the device from undesirable effects of actions based on considerations other than those taken in the best interest of the educational community.

APPENDIX 4

OE Project No. 6-1889

INSTRUCTIONS FOR USE OF
THE COLLEGE SUGGESTOR

For use by high school counselors participating in the College Suggestor field test, and their advisees.

Fall, 1967

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INSTRUCTIONS FOR USE OF
THE COLLEGE SUGGESTOR

For use by high school counselors participating in
the College Suggestor field test, and their advisees.

Fall, 1967

A "Computer" on Your Desk Top. . .

The College Suggestor is a powerful information storage and retrieval system. By following these instructions, you will get maximum use out of it. There are over 400,000 pieces of information stored in this system. The notes which follow will help put all of this information to work for you in the process of suggesting colleges for further consideration. Please treat the device as a valuable tool. That is what it is.

The College Suggestor is designed to answer such questions as: At what colleges will I find the college characteristics which match my interests, abilities and inclinations? What are some of the colleges which it would make sense for me to study in greater detail? The device can be used in many ways in order to provide answers to such questions as these.

All the ways to use this system are not outlined here. You will find that imaginative refinements will suggest themselves as you gain experience with the device. It is good to keep in mind that -- in a manner of speaking -- you have here at your fingertips a desk-top "computer."

The descriptions of colleges were indeed organized by computer. Instead of keeping the information inside a central computer memory, though, this project has found a way of putting all of the information into your school. You may ask the information system as many questions as you wish. You can change the nature of the questions you ask at will. The system will provide you as many lists of colleges as you need.

Introducing the College Suggestor. . .

The College Suggestor is an information retrieval system similar to systems now in use in the National Bureau of Standards, the United States Patent Office, and the Air Development Command of the Air Force. To make it work, you must have the set of 220 plastic cards, a working file to hold the cards when not in use, a light box or stand with sources of light above and below, a code book, and these instructions.

The unit you have been provided is self-contained. It is made up of a working file box, 11 5/8" x 9" x 1 7/8", 220 plastic cards, one each for as many characterizations of colleges, a college characteristics and college code list, and a plastic light stand. The system is designed to operate on a table top. The light stand is placed on top of a large rectangle of pure white paper, somewhat larger than the stand itself, and the large open-end of the stand is pointed toward daylight. Alternatively, a high intensity lamp such as the "TENSOR" may be used to illuminate the light surface beneath the stand, thus providing excellent reflection upwards. In addition, there needs to be a light source above the stand, and the ceiling lights are satisfactory for this purpose.

Although the system will operate quite satisfactorily using only the components which have been provided, some users will wish to construct a light box. A note is attached at the end of these instructions concerning a box that can readily be built in a high school wood shop.

A Little Care Will Go a Long Way.

To set up for use, remove the cover of the College Suggestor working file and set it aside. Open and secure the folding stand on the back of the base, and allow the base to sit at an angle off the vertical on the right half of the working surface. Pick up the cover and place it open end up against the box at an angle. Fasten the cover to the box with a strong rubber band. Set the code list and instructions nearby. Using both hands, remove the first 120 cards from the box and place them in the cover. The College Suggestor is now ready for use.

You will see that the 220 plastic cards are grouped in 20's, and that the eleven groups of 20 each are printed in different colors. You will also see that there are numbered tabs running from left to right in serials of 20 each. The groupings in 20's, the 11 colors of ink, and the serial tabs are three features to help you find the cards you want quickly and to make it easy for you to put them back where they belong when you have finished using them. The idea is to make it handy to keep the system in good working order so that the next person wanting to use it will be able to find the cards that he must have as easily as the last person did. The set-up will work for *every* user so long as *each* user does his part.

IMPORTANT

At the end of each day's use, check to see that all the plastic cards are re-filed in order. Run the fingernail along the numbered tabs to assure that the cards are in the proper sequence. Then place the code list and instructions in the box, and put the lid on loosely. (It is not necessary to fold down the stand each day.) Place the closed box, *face down,* on a *flat* desk top. This will allow the cards to flatten during the *night*, and will prevent them from developing excessive curl. This precaution also will help keep the cards from dust and damage.

At the start of each day, open the box, put it on its stand, invert the lid, redistribute the cards in the two containers, and fasten the containers together securely.

As the plastic stand and cards build up excessive smudges, fingerprints, etc., they may be wiped down with a clean, dry, soft cloth. With reasonable care, the College Suggestor should last at least two years. The information in it probably will be out of date before the system wears out.

Repairs to the cards may be made with scotch tape. Repairs to the working file may be made with masking tape. Repairs to the plastic stand may be made using ethylene chloride, a plastic solvent used in "welding" surfaces of this type of material. Mends should be allowed to dry thoroughly before placing cards upon the stand.

Getting Ready to Ask the Question. . .

There are 12 major categories of college characteristics in the set of 220 cards. They are as follows:

Categories	Card Nos.
Location	1-13
Size of Student Body	14-18
Controlling Authority	19-24
Prerequisites	25-33
Admission Information	36-49
Costs	50-63
Financial Aid	64-73
Program Features	74-100
Characteristics of Student Body	105-143
Characteristics of Faculty	144-146
Baccalaureate Degree Majors	147-203
Sub-Baccalaureate Majors	204-219
Blank Cards	34, 35, 101, 102, 103, 104, 220

The seven blank cards have been provided to give the high school counselor a way of encoding into the system his own information about colleges which he has found to be particularly useful. Each card may be labeled in accordance with the characteristic the counselor wishes to add and holes may be etched in each of these cards at the code boxes of the colleges where the given characteristic is known to be present.

You will note that the first card in each category has a colored tab, and that the tabs of other cards are transparent except for the number. This is to make it easy to locate the beginning card in each category.

It will be convenient for each school to have its own supply of mimeographed checklists in which the dozen categories outlined immediately above are shown together with the 213 coded characteristics, by category, as listed at pages 1-3 of the code book. The checklist, then, can be used by the students within either individual or group counseling sessions to "inventory" those college characteristics which are of interest. Such a checklist, then, becomes an aid for relating each student's situation to the system. He identifies in the system those college characteristics which match his aptitudes, interests, and inclinations.

To make use of the College Suggestor effective, each student's "shopping list" of college characteristics should be prepared prior to turning to the College Suggestor for answers to the question: AT WHAT COLLEGES CAN I FIND THIS COMBINATION OF CHARACTERISTICS?

Where Would I Fit In?

This case will show you how the College Suggestor works. I am a practical sort of guy, and would feel more comfortable with students who are bent on preparing for a specific career (111). It would suit me also if the program of the college which I attend is pointed toward occupational preparation (98). I intend to major in a trade or industrial field (203), and to take a Bachelor's Degree in a technological institution (77). Where would I fit in?

To ask the College Suggestor this question, place cards 111, 98, 203, and 77 on the light stand. Look for spots of white light. You will find only one, and it is numbered 1884. If you have any trouble getting 1884, study Hints on Making the Device Work Smoothly. (See page 9 in this instruction.) Look up the code number in the College Name List (page 22). It turns out to be Letourneau College, Longview, Texas.

What Colleges For Me?

Here is a slightly more complicated situation. I have not taken foreign language during high school (31), although I have had three years of mathematics (32). I would like to attend college somewhere in the Great Lakes States (3) where tuition, fees, room and board would not be greater than $3,100 per year (62). I would like to have at least a modest chance of getting financial aid during my freshman year (69). So far as I know now, I want to major in Sociology (201). What colleges might I consider?

In order to relate my situation to the College Suggestor system, I withdraw from the file the cards numbered 31, 32, 3, 62, 69, and 201. I line them up on the light stand, making sure that the words "THE COLLEGE SUGGESTOR" at the lower left of each card and "Developed Cooperatively" at the lower right appear in good registration. If these letters on a stack of cards superimpose one on top of the other, light will clearly shine through those holes which identify the colleges satisfying the search question. For this particular search question, twelve colleges are identified. I would rather narrow the field somewhat, so am ready to change the nature of my question.

Next, I would like to think about enrollment and the composition of the student body. Which of the twelve colleges so far identified are coeducational (107), and have an enrollment somewhere around 800-900 students (15)? I find that there are three: Taylor (0575), Alma (0909), and Carroll (2076). I decide now to look a bit further to see what additional colleges would be opened for further consideration on looking at higher enrollment figures, say somewhat over 1,000 (16). Again, I wish to stick with coeducational institutions (107). This modification adds to my list Carthage (0440), Monmouth (0500), Rockford (0516), and Adrian (0907). I now have a list of seven colleges fitting my evolved bill of particulars. It would now be appropriate for me to get hold of catalogues and presentation books in order to study these institutions in greater detail.

Let's Look at Priorities. . .

It is possible to use the College Suggestor first to determine colleges which have absolutely essential characteristics and then to look at it again in order to see which of them have what characteristics of less critical interest. For example, say I plan to be a doctor and want to start immediately in "pre-med" (152). My counselor feels it is essential that I attend an institution which has a pre-professional emphasis (98). It is also essential from my own viewpoint that it be coeducational (107). By withdrawing cards 152, 98, and 107, and placing them against the light source, I find that there are 17 colleges which fill this bill. I can now look at some of the college characteristics which are important to me, though not absolutely essential, to determine which of the 17 colleges have which of the several characteristics.

It would be important, I feel, to have the opportunity to enter the NROTC program (87), to have classmates whose aptitudes are similar to mine (my SAT-M was 675) (121), to have at least a good portion of my classmates from the top one fifth of their respective high school graduating classes (112), and to be in a student body from which at least one fourth of the men enter graduate study (129). These four things are important to me. Unfortunately, though, when they are added to the essential characteristics, there are no colleges left in my list. By manipulating the important cards, I find that it will be necessary to give up the idea of NROTC and of being in a school where the mathematical aptitudes of the freshmen are apt to be unusually high. I now find that Evansville (0550) and Bard (1231) will fit my bill of particulars.

A Three-Dimensional List. . .

Let us look at a case in which characteristics are divided into three priorities: During a recent group counseling session, I made notes on a check-list provided by the counselor concerning all the college characteristics that would be of interest to me. Beside each characteristic that I regarded as essential, I placed a ①. Beside each characteristic that I regarded as important, I placed a ②. Characteristics which would be nice to find, though there would be no disaster if they were lacking, I classified as ③. I am now using this checklist and the College Suggestor in order to identify colleges in New England and the Middle Atlantic States which would fill the bill.

The essentials are that I wish to major in Anthropology (197), and find expenses for tuition, fees, room and board to be under $3,100 (62). I place these two cards on the light stand, and see that sixteen colleges combine these essentials. In turn, I add card 1 and then card 2 to learn that five of the colleges are in New England, eleven of them in the Middle Atlantic States. Knowing this much, I can now go on to consider the characteristics of these colleges which are not essential but still important.

It is important to me to find a college which affords the opportunity to undertake independent study (93). Also, I want to be reasonably certain that I would be able to live on campus (137), and to find a coeducational student body (107). On adding these important features, I find that there remain one New England college, Brown (1749), and four colleges in the Middle Atlantic States, American University (0293), Catholic University (0296), NYU (1331), and Temple (1729).

Searching further in terms of those characteristics in which I have a moderate degree of interest, I find that none of the colleges offers a guaranteed four-year tuition base (64). However, all of them have adequate opportunities available for off-campus employment (66), and three of them (American, NYU, and Temple) even offer institutional college work-study programs (65). Thus, rises in tuition during my tenure at any of these colleges would not hurt too much. All five of them grant advanced placement for college level work completed during secondary school (90). At both Temple and Brown, my interest in the stage could be readily satisfied since cultural activities center mainly on the campus (100).

Making this search in priority steps, then, I turn up five institutions which not only match the essentials that I have prescribed, and afford opportunities which I regard as important, but they even provide some of the things that I would find it nice to have as part of college life.

A Report on John's Case. . .

The things that John is looking for in a college were described in a recent publication.[1] In all, there are 21 factors in which he expresses an interest.

The most serious problem in John's case is that he expects to find a college in which an academic course of study is not a prerequisite to admission (27). If he is to plan to attend college in the Great Lakes States (3), take a general program of studies in the arts and sciences (173), and find a student body which is coeducational (107), he has but one choice: Flint Community Junior College (0931).

If he erases the academic deficiency by taking the high school courses he needs to fill out a college preparatory curriculum, two additional colleges are opened for further consideration: Illinois Tech (0476) and Michigan Tech (0950). These fit into John's SAT range. At both these institutions, tuition, fees, room and board cost less than $2,600 (61). Both offer summer trial sessions (46), and counseling services (88). Over one fourth their faculties hold the doctorate (145). These colleges emphasize social and personal development (109), accept three years of English (29), and offer admission to more than 60 per cent of qualified applicants (37). At both, virtually all residential facilities are on campus (137). Illinois Tech reports that over 80 per cent of a recent freshman class returned the second year. Michigan Tech has ROTC.

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[1] The Bulletin of the National Association of Secondary School Principals, Vol. 51, No. 320, September 1967. Page 86.

Neither institution is denominational (24), is classed as a liberal arts college (75), nor is either in a city or town of 10,000 to 50,000 (12). Neither place has as many as one half of the freshmen on financial aid programs (68), nor does packaged aid fall in the planned range (71). However, on further study using related cards, it turns out that at both institutions, packaged aid runs higher (72, 73), college work-study programs are available (65), and at one of them there is adequate opportunity for off-campus employment (66). Thus, it would be reasonable to expect that John's financial problems could be resolved at either institution.

How Does Jane Fare?

Jane's interests were described in a recent publication.[1] In all, there were 24 factors included in Jane's bill of particulars. As will be seen in placing the case on the College Suggestor, Jane has been overly restrictive. However, if she is willing to go to college outside the Southeast (cancel 5), and fit into a student body somewhat larger than 1,000 (16), some interesting opportunities are opened to her. Let us review the case.

Jane wishes to attend a liberal arts college (75) which seeks a geographically diverse student body (132), and is independently controlled (21). She wishes to major in English (164), be certified to teach in secondary school on graduation (82). She hopes to find a situation in which virtually all residential facilities are on campus (137), and where concerts, plays, and so forth center mainly on campus rather than in a nearby city (100). Since she is such a good student, she would like to find a college where more than half the faculty have their doctorates (144).

Jane has an excellent record in school, with four years of English (28), over two years of foreign language (30), over a year of laboratory science (33). She scored well over 650 on the verbal section of the SAT (117), and will graduate high in the upper fifth of her secondary school class (112). She would not be adverse to considering early admission to the college of her choice (40), or to having an early decision at the first part of the senior year (41). She hopes to enter a departmental honors program in English (89), to engage in a good bit of independent study (93), and to take her junior year abroad (94).

Jane's rather complex question is: What colleges that I may attend combine these characteristics? The College Suggestor reveals that there are five that she might attend: Wesleyan (0286), Mount Holyoke (0861), Wellesley (0898), Vassar (1401), and Rice (1902). One final check still is necessary. Would it be appropriate for her to consider all five of these? On searching card 106, Student Body All Men, it is found that Wesleyan (0286) must be excluded from further consideration. The four remaining are perfectly appropriate for her to look into further.

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[1] Op. cit., page 87.

What About Carl's Situation?

Carl's "druthers" were outlined in a recent publication.[1] What are some of the occupationally-oriented programs for him to consider? According to the College Suggestor, Carl could consider an occupational program in scientific data processing (211) at a coeducational institution (107) in the Great Lakes States (3) where formal counseling services are available (88) by looking more deeply into Thornton (0532), Vincennes (0580), and Denison (1502).

The first two conduct junior college programs (80), one is in a town of 10,000 to 50,000 (12) though the others bracket that size town (13, 9). At two of them (Vincennes and Denison) most residential facilities are on campus (137). These institutions, however, do have a foreign language requirement. The third (Thornton) has no such requirement (31). One of the institutions (Thornton) reports ACT scores in Carl's range (123), there is no ACT information on the others (122). Unfortunately, Carl will have a tough time with finances at all these colleges, for costs are higher than he had hoped (60, 61, 62) and financial aid packages are smaller (71, 72).

It would seem that Carl will have to do some soul-searching about his college plans on both academic and financial grounds. Perhaps his counselor will encourage him to consider student loans as a way toward financing his education, and help him identify colleges not requiring a foreign language (31). It would also be good for him to learn at what colleges realistic compromises of some of his interests might be realized. (Somewhat farther from home -- 4, 6; other occupational goals -- 204-219; higher academic challenge -- 124, 119; etc.) In any case, Carl will require a good deal of follow-up before his college plans can be settled.

Is the Situation Any Brighter for Betty?

Betty's expressions of interest on the kind of college for her were outlined in the same publication.[2] The situation for her seems substantially brighter. As might be expected, Mount Holyoke (0861), and Wellesley (0898) come out from an initial College Suggestor search. Also in New England, Connecticut College (0262), Bates (0744), and Wheaton (0902) show up, though Bates is coeducational (107 since blue from card 105 shows through the hole). It will also be noted that the russet from 28, 30, and 33 shows through the hole for code 0902, meaning that these three prerequisites must be overlooked in order to identify Wheaton.

In the nearby Middle Atlantic States (2), Goucher (0778), Elmira (1272), Vassar (1401) and Bryn Mawr (1627) turn up. These four plus the five in New England might be studied in greater detail. Expert counselor judgment will be called into the situation to measure the relative challenge of these institutions.

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[1] ACAC Newsletter, Vol. 5, No. 4, 1967. Page 6.

[2] Op. cit.

Hints on Making the Device Work Smoothly. . .

To remove cards -- If, for example, you wish to remove card number 86 from the file, pull cards 20, 40, 60, and 80 forward with the index and second fingers of your right hand. Hold card 80 forward. Push the tab of 87 to the rear with the index finger of the left hand. Slip the second and third fingers of the left hand under the tab of 86 with the thumb on top, grasp lightly and remove.

To align cards on stand -- Be sure the first sheet down lies flat and flush. Allow the right edge to hang over slightly. Bring a succession of sheets up to the left edge of the first sheet using a fingernail as a guide. Align "THE COLLEGE SUGGESTOR" at the lower left and "1966" at the lower right. As each sheet is aligned, fasten at the top with a clothes pin. When all cards are stacked and aligned, fasten a second clothes pin.

To keep cards in alignment -- Make a record of the cards in the stack so the top headings will not need to be referred to during use. Leave clothes pins secured throughout a search. Check every once in a while to assure that the left and lower right legends remain aligned. If the holes begin to "tunnel," getting smaller in diameter as the search proceeds, the stack must be re-aligned.

To find white holes -- Holes of many colors, shades, and hues will show up. The holes you wish to identify are the white ones. Bright white reflected light beneath the stand is crucial. A flourescent source is preferred to incandescent, the latter tending to be of a yellowish color and to have hot spots. A high intensity lamp such as the "TENSOR" is the only incandescent lamp that has been found to be satisfactory. Cards that are yellow, light blue, or light tan are best used near the top of a stack, where their colors can be distinguished from the white light source. In case of doubt, where a hole appears clear but you are not absolutely sure, it is a good idea to finger through the cards, one at a time, to check that one position. If the two clothes pins are clipped to the top of the cards and fixed to the stand, the cards will fall back in position after such a check.

To read-out code numbers -- It is most convenient to work as a team, one person writing down the college code numbers while the other searches them out. When a dozen or more college codes have to be read out, it is best to work down the grid from top to bottom, in ascending college code number order, using a straight edge as a guide, and looking for holes one line at a time. Where code numbers are difficult to read, move your head slightly from left to right until the source of light combined with the angle of viewing give the clearest image. Good light from above is essential. It is usually best to place a card of a lighter shade on top, increasing the contrast between the printed numbers and the background.

To keep track of college code numbers -- The last two digits of the college code numbers repeat in the same vertical column every fourth horizontal row. You can see this by scanning down the columns starting with 0015 through the succession: 0015, 0049, 0083, 0115, 0149, 0183, etc. There are

8

one hundred college codes grouped on each three rows, 34 on the first and second rows, 32 on the third, with the last two positions of the third row blank. With this arrangement, each next hundred starts a new row.

To use color as information -- Often, by inspecting holes that are blocked by colored ink spots, it is possible to determine what card or combination of cards are doing the blocking. A college you know about and are interested in, for example, may not come out of your search, and you may wonder why this is so. By looking at the color in the hole for that college's position, and chasing down the combination making up the color of the spot, you can fathom the characteristics that the college you seek does not have.

To return cards to the file -- Order cards to be returned to the file -- from low to high. If, for example, you wish to return card 86 to the file, lift the next lowest multiple of 20 (80) forward, exposing the series of cards numbered 81 through 100. Push 87 to the rear, causing cards in front of it to spring forward. Hold 85 forward and slip 86 in place. Ease the card downward by applying pressure using all the fingers on the middle of the back of the card. Shake the deck gently to position all cards in place.

To decode numbers to colleges -- The college code list is in alphabetic order by state -- Alabama to Wyoming, and alphabetic within state. Colleges in the territories and possessions, and the military academies are listed at the end. Colleges out of code number sequence are cross-referenced both alphabetically and numerically with the exception of Carthage College, whose move to Wisconsin from Illinois occurred after the College Suggestor code numbers were assigned. Colleges having code numbers in the College Suggestor system and not included in the code list are seminaries and other such institutions of a highly specialized nature.

Some Special Uses of the Device. . .

As you become experienced in the use of the College Suggestor, some special ways of using it will turn up. Some of these uses are suggested below.

Cards 47, 48, and 49 can be used in successive pairs to tell the period in which the application deadline occurs. Orange spots shown by cards 47 and 48 identify those colleges with deadlines in the period February through March. A combination of cards 48 and 49 points toward deadlines in the period April through July. A "no spot" in card 49 identifies a college with no firm deadline date or with a date in August or later.

Cards 54-57, and 58-63 can be used in successive pairs to determine ranges of cost. Orange spots shown by a combination of 54 and 55, for instance, identify colleges with tuition and fees between $1,100 and $1,200. Orange spots shown by combination of 58 and 60 identify colleges with tuition, fees, room and board between $1,100 and $2,100. Orange spots shown by a combination of 60 and 62 identify colleges whose tuition, fees, room and board are between $2,100 and $3,100.

Cards 112 and 113 can be used to identify colleges in which a recently enrolled freshman class had between one fifth and two fifths of its members from the upper one fifth of the respective high school graduating classes. These colleges will be shown by light blue spots.

Cards 114-117, 118-121, 122-125 can be used in successive pairs to tell the range of test scores within which the mean of a recent freshman class fell. With the higher numbered card on the bottom, look for the pale blue spots.

To get an idea of those colleges that offer extensive work in a given area, superimpose all the cards in that area and read-out the result. For example, to look at the extensiveness of offerings in the biological sciences, align cards 150 through 154 on the stand. White holes will identify colleges with most extensive offerings in biological sciences, light green spots will indicate colleges with somewhat less extensive offerings, and darker green will identify those with offerings more limited still. Laying the cards on the stand starting with the general (e. g. 150) and moving out (e. g. 151) into areas of specialization (e. g. 152, 153, 154) will help in comparing the scope and nature of the offerings in the given field.

Some Definitions of Terms. . .

Although most of the college characteristics in the College Suggestor are self-explanatory, some need clarification. The explanations below should fill the gaps where the meanings are not immediately apparent.

States included in the regional location cards are as follows:

1. New England
   CON, MAI, MAS,
   NHA, RIS, VER.
2. Middle Atlantic States
   DEL, DCO, MAR,
   NJE, NYO, PEN.
3. Great Lakes States
   ILL, IND, MIC,
   OHI, WIS
4. Plains States
   IOW, KAN, MIN,
   MSR, NEB, NDA,
   SDA.
5. Southeast
   ALA, ARK, FLO,
   GEO, KEN, LOU,
   MSP, NCA, SCA,
   TEN, VIR, WVI,
   CZO, PRI, VIS.
6. Southwest
   ARI, NME, OKL,
   TEX.
7. Rocky Mountain States
   COL, IDA, MON,
   UTA, WYO.

8. Far West

ALS, CAL, HAW,
NEV, ORE, WAS,
GUA.

The above categories include all 50 states, the District of Columbia, the Canal Zone, Guam, Puerto Rico, and the Virgin Islands.

Campus Orientations -- Cards 96, 97, and 98:

Campus Orientation Inclines Toward Liberal Arts Emphasis -- Here the interest on the campus is mainly in giving the student a basic liberal arts education stressing a curiousity about new knowledge and ideas and help in self-understanding. Abstract and theoretical ideas are emphasized.

Campus Orientation Inclines Toward Technical/Scientific Emphasis -- This is the scientific-minded institution with excellent laboratory facilities and an interest in research. The students are on their own to take advantage of such facilities. There may be a good deal of competition here.

Campus Orientation Inclines Toward Occupational/Pre-Professional Emphasis -- Here occupational training is stressed. While academic experiences are provided, applied and practical matters are stressed in contrast to the theoretical. Students are usually committed to some particular field and have come for training in that area.

Student Orientations -- Cards 108, 109, 110, 111:

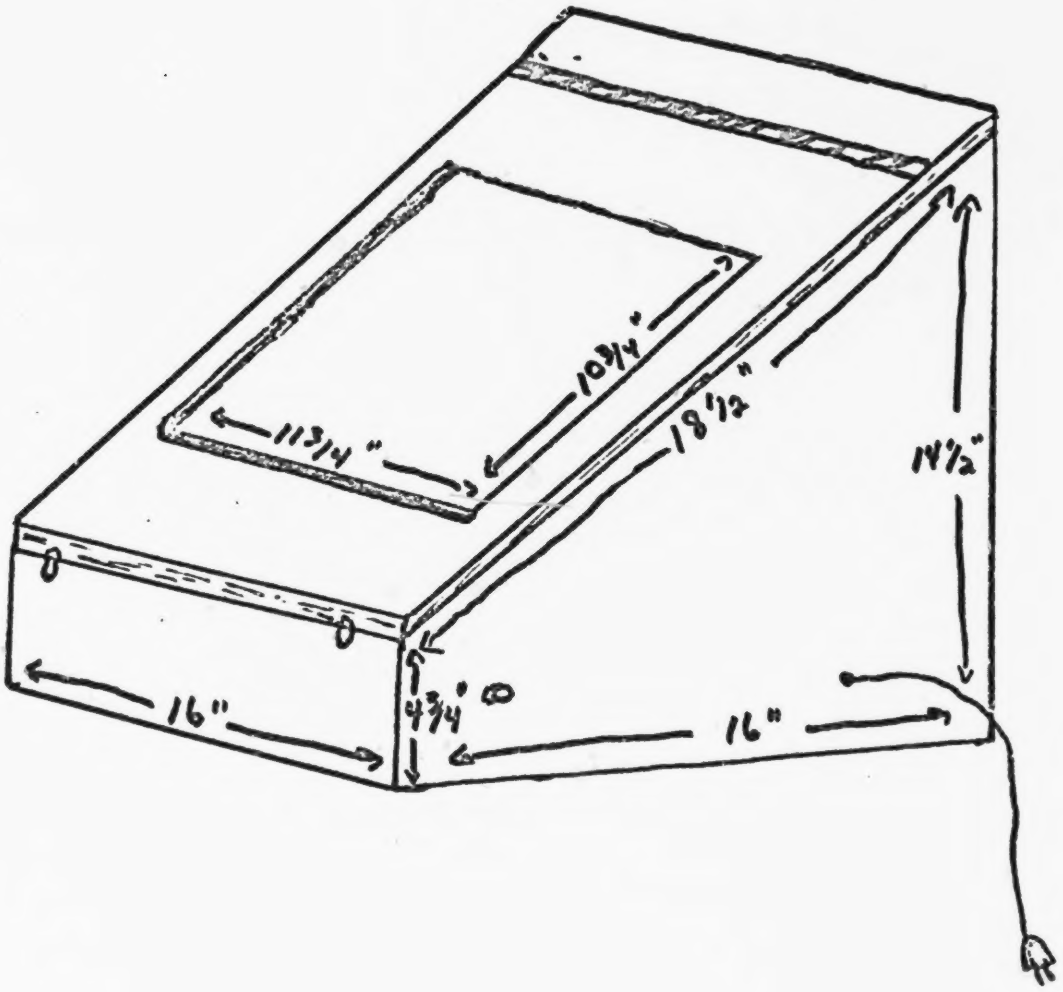
Student Orientation Inclines Toward the Scholarly and Intellectual -- Academic achievement and pursuit of knowledge for its own sake are the preoccupation of students here. Social and institutional activities are informal and students tend to pursue these informally and individually.

Student Orientation Inclines Toward Social and Personal Development -- Although students are fully engaged in the academic side of campus life here, the importance of extra-curricular activities is well-recognized, formally organized, and viewed by most students as important parts of their development.

Student Orientation Inclines Toward Congeniality -- "Togetherness" typifies this campus. Students and faculty work closely together in all phases of campus life. Students show concern for social responsibility and social action.

Student Orientation Inclines Toward Practicality -- Students stress the importance of establishing interpersonal relationships on campus and of working within the "system" to attain a degree of status. Student leadership and school spirit are quite evident.

Suggestions for Making of Light Box



A pane of frosted glass is set into the top of the light box and edged at the left and bottom by a perpendicular flange.

Light is provided by two flourescent tubes.

A moveable top on the box (hinged to open up) provides access to the flourescent tubes.

Further Information. . .

Northwestern University, Evanston, Illinois, developed the College Suggestor during 1965-66 as Project No. X-014, under contract to the United States Office of Education -- No. OE-6-10-147. Educational Testing Service, Princeton, New Jersey was a sub-contractor in the developmental phase. During academic year 1967-68, Northwestern University is moving the project through its field test phase, again under contract to the United States Office of Education -- No. OEC 1-7-061889-3532, to be concluded August 31, 1968.

Further information concerning Project No. X-014 may be obtained from journals cited in the foregoing pages, the Educational Research Information Center, Office of Education, or the field test project staff.

Dr. B. Claude Mathis
Principal Investigator
Northwestern University
Evanston, Illinois

Mr. Roger Marshall
Technical Consultant
Arlington, Virginia

Dr. Wesley W. Walton
Educational Consultant
Princeton, New Jersey

APPENDIX 5

NORTHWESTERN UNIVERSITY

OE PROJECT No. 6-1889

Name ______________________________ Date ____________

School __________________ Class (Freshman, Soph., Junior, Senior) ___________

Do you plan to go to college? _____Yes _____ No

If you do plan to attend college, how long have you had these plans?

_____ As long as I can remember.
_____ Since the start of high school.
_____ This year.

Listed below are some characteristics of colleges. Please rank those which you think are important in choosing a college to attend by placing 1 in the most important, 2 in the next most important, etc. Rank only those which you genuinely feel are important to you.

_____Location of college.
_____Characteristics of faculty.
_____Size of student body.
_____Characteristics of student body.
_____Admission requirements.
_____Type of college (public, private, church related, etc.).
_____College costs.
_____Type of living accomodations available.
_____Availability of financial aid.
_____Major fields of study available.
_____Availability of vocational and technical programs.
_____Type and extent of extra-curricular activities.

APPENDIX 6

NORTHWESTERN UNIVERSITY

OE Project #6-1889

Name ______________________________ Date ________________

School ____________________ Grade __________

1 Location in New England
2 Location in The Middle Atlantic States
3 Location in The Great Lakes States
4 Location in The Plains States
5 Location in The Southeast
6 Location in The Southwest
7 Location in The Rocky Mountain States
8 Location in The Far West
9 Located in A Suburb of Metropolitan Area of 100,000 or over
10 Located in A City, 500,000 or over
11 Located in A City, not a Suburb, 50,000 to 500,000
12 Located in A City or Town of 10,000 to 50,000
13 Located in A Town of less than 10,000
14 Enrollment is Below 600
15 Enrollment is Between 600 and 999
16 Enrollment is Between 1000 and 2499
17 Enrollment is Between 2500 and 9999
18 Enrollment is 10,000 or more
19 Control of College by State or Federal Agency
20 Control of College by Local Government
21 Control of College by Independent Non-Profit Body
22 Control of College by Independent Proprietary Body
23 Affiliation of College with Roman Catholic Church
24 Affiliation of College with Religious Group other than Roman Catholic
25 Twelve or more Secondary School Units Required
26 Fifteen or more Secondary School Units Required
27 Academic Course of Study in Secondary School not Specified
28 Prerequisite of Four Years English
29 Prerequisite of Three Years of English
30 Prerequisite of at least Two Years Foreign Language
31 No Foreign Language Prerequisite
32 Prerequisite of at least Two Years Mathematics
33 Prerequisite of at least One Year Laboratory Science
36 An Admissions Test is Required
37 Over Sixty Percent of Qualified Applicants were Offered Admission in Recent Year
38 Over Sixty Percent of all Applicants were Offered Admission in Recent Year
39 Admissions Decisions made on Rolling Basis
40 Early Admission Granted when Appropriate
41 Early Decisions made in Appropriate Cases
42 Freshmen Admitted other than in the Fall
43 Transfers Admitted other than in the Fall
44 Will Consider Applicants from Lower Half of Graduating Class under certain Circumstances
45 Will Consider Non-High School Graduates when Circumstances Warrant
46 Summer Trial Session Available for Promising Applicants
47 Admission Applications Received Prior to February
48 Admission Applications Received Prior to April
49 Admission Applications Received Through July
50 Tuition and Fees for out of State Students under $500
51 Tuition and Fees for in State Students under $500
52 Tuition and Fees under $600
53 Tuition and Fees under $800
54 Tuition and Fees under $1,000
55 Tuition and Fees under $1,200
56 Tuition and Fees under $1,500
57 Tuition and Fees over $1,500
58 Tuition, Fees, Room and Board under $1,100
59 Tuition, Fees, Room and Board under $1,600
60 Tuition, Fees, Room and Board under $2,100
61 Tuition, Fees, Room and Board under $2,600
62 Tuition, Fees, Room and Board under $3,100
63 Tuition, Fees, Room and Board over $3,100
64 Offers Four-Year Guaranteed Tuition Base
65 Institution has College Work-Study Program
66 Adequate Opportunity Available for Off-Campus Employment
67 Average Earnings for Undergraduate Jobs $300 or more per year
68 More than half the Freshman Class has been Receiving Financial Aid in recent Years
69 More than One Fourth the Freshman Class has been Receiving Financial Aid in recent Years
70 Less than One Quarter the Freshman Class has been Receiving Financial Aid in recent Years
71 Average Student Award, Including Single and Packaged Aids, has Recently run $100 to $499
72 Average Student Award, Including Single and Packaged Aids, has Recently run $500 to $999
73 Average Student Award, Including Single and Pacaged Aids, has Recently Exceeded $1,000 per year
74 Type of Academic Program: University
75 Type of Academic Program: Liberal Arts College
76 Type of Academic Program: Fine Arts College
77 Type of Academic Program: Technological College
78 Type of Academic Program: Theological or Religious College
79 Type of Academic Program: Teachers College & Liberal Arts and Teacher Education
80 Type of Academic Program: Junior College
81 Type of Academic Program: Sub-Baccalaureate Technical and Semi-Professional
82 Certification Program Offered in Secondary Education
83 Certification Program Offered in Elementary Education
84 ROTC Required
85 Air Force Reserve Officer Training Corps Program Available
86 Army Reserve Officer Training Corps Program Available
87 Navy Reserve Officer Training Corps Program Available
88 Formal Counseling Services Available for Undergraduates
89 Departmental Honors Programs Available
90 Advanced Placement given for College Level Work Completed in Secondary School
91 College Credit given for College Level Work Completed in Secondary School
92 College Credit and/or Advanced Placement given for College Level Work on Basis of an Examination
93 Independent Study Courses Available
94 Formal Program Available for Study Abroad
95 Baccalaureate Requirement may be met in less than Four Years
96 Campus Orientation Inclines Toward Liberal Arts Emphasis
97 Campus Orientation Inclines Toward Technical/Scientific Emphasis
98 Campus Orientation Inclines Toward Occupational/Pre Professional Emphasis
99 Cultural Activities (Concerts, Plays, Art Exhibits, Etc.) Readily Available by Frequent Public Transportation
100 Cultural Activities (Concerts, Plays, Art Exhibits, Etc.) Center Mainly on Campus
105 Student Body all Women
106 Student Body all Men
107 Student Body Coeducational or Coordinate
108 Student Orientation Inclines Toward the Scholarly & Intellectual
109 Student Orientation Inclines Toward Social and Personal Development
110 Student Orientation Inclines Toward Congeniality
111 Student Orientation Inclines Toward Practicality
112 Over Forty Percent of Class Recently Enrolled Graduated in Top Fifth of Secondary School Class
113 Over Twenty Percent of Class Recently Enrolled Graduated in Top Fifth of Secondary School Class
114 CEEB Mean Score for Recent Freshman Class on Verbal Section of SAT was over 400

115 CEEB Mean Score for Recent Freshman Class on Verbal Section of SAT was over 500
116 CEEB Mean Score for Recent Freshman Class on Verbal Section of SAT was over 600
117 CEEB Mean Score for Recent Freshman Class Section of SAT was over 650
118 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 400
119 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 500
120 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 600
121 CEEB Mean Score for Recent Freshman Class on Mathematical Section of SAT was over 650
122 ACT Mean Composite Score for Recent Freshman Class 12 or over
123 ACT Mean Composite Score for Recent Freshman Class 16 or over
124 ACT Mean Composite Score for Recent Freshman Class 21 or over
125 ACT Mean Composite Score for Recent Freshman Class 26 or over
126 As many as One Fourth Women Graduates Enter Graduate Study
127 As many as One Half Women Graduates Enter Graduate Study
128 As many as One Half Men Graduates Enter Graduate Study
129 More than One Fourth Men Graduates Enter Graduate Study
130 Less than Twenty Percent Total Enrollment are Graduate Students
131 Forty Percent or more belong to Social Fraternities or sororities
132 Seeks a Geographically Diverse Student Body
133 More than One Half of the Student Body Commuting Day Students
134 No Residential Facilities Available
135 Residential Facilities on Campus for Women only
136 Residential Facilities on Campus for Men only
137 All or almost all Residential Facilities are on Campus
138 Fraternities have Housing Facilities
139 Sororities have Housing Facilities
140 Over Sixty Per Cent of a Recent Freshman Class Returned the Second Year
141 Over Eighty Per Cent of a Recent Freshman Class Returned the Second Year
142 Half or more Men Graduates from these Junior Colleges go on for Higher Education
143 Half or more Women Graduates from these Junior Colleges go on for Higher Education
144 More than Half the Faculty Members have their Doctorates
145 More than One Fourth the Faculty Members have their Doctorates
146 More than Three Fourths the Faculty Members have Advanced Degrees
147 Agriculture: General
148 Agriculture: Agronomy; Food Technology; Horticulture; Husbandry; Management of Farm, Dairy, Wildlife; Soils
149 Architecture
150 Biological Sciences: Biology, General
151 Biological Sciences: Botany or Zoology, General
152 Biological Sciences: Premedical, Pre-dental, Preveterinary, Optometry (Pre-Professional)
153 Biological Sciences: Anatomy, Bacteriology, Entomology, Genetics, Nutrition, Physiology, Plant Pathology, Plant Physiology
154 Biological Sciences: Biochemistry, Biophysics
155 Business and Commerce: General
156 Business and Commerce: Accounting
157 Business and Commerce: Hotel and Restaurant Administration
158 Business and Commerce: Secretarial Studies
159 Education: Nursery, Kindergarten, Early Childhood, Elementary
160 Education: Secondary, Combined Elementary & Secondary
161 Education: Fine & Applied Arts (Art, Business & Commerce, Home Economics, Music, Physical, Recreation, Health, Industrial & Industrial Arts, Agriculture, General)
162 Education: Exceptional & Atypical, Speech Correction
163 Engineering
164 English, Literature & Journalism
165 Fine and Applied Arts: General
166 Fine and Applied Arts: Art
167 Fine and Applied Arts: Music
168 Fine and Applied Arts: Speech & Dramatic Arts
169 Foreign Languages: General, Linguistics, Philology
170 Foreign Languages: Classical, Oriental, Exotic (Greek, Latin, Chinese, Hebrew, Hindu, Japanese, Urdu)
171 Foreign Languages: Modern (French, German, Italian, Portuguese, Russian, Spanish)
172 Forestry
173 General Program of Studies: Arts & Sciences
174 Geography
175 Health Professions: General, Chiropody, Dental Hygiene, Hospital Administration, Occupational Therapy, Public Health
176 Health Professions: Medical Technology, Radiologic Technology
177 Health Professions: Nursing or Public Health Nursing
178 Health Professions: Pharmacy
179 Health Professions: Physical Therapy
180 History
181 Home Economics: General
182 Home Economics: Child Development, Clothing & Textiles, Foods & Nutrition, Institutional Management, Family Relations
183 Law
184 Library Science
185 Mathematical Subjects: Mathematics and Statistics
186 Military, Naval or Air Science; Merchant Marine Deck Officer
187 Philosophy, Scholastic Philosophy
188 Physical Sciences: General
189 Physical Sciences: Chemistry, Pharmaceutical Chemistry
190 Physical Sciences: Physics
191 Physical Sciences: Earth Sciences (General, Geology, Geophysics, Oceanography)
192 Physical Sciences: Astronomy, Metallurgy, Meteorology
193 Psychology
194 Religion: General & Liberal Arts, Religious Education, Theology
195 Social Sciences: General
196 Social Sciences: American Civilization
197 Social Sciences: Anthropology
198 Social Sciences: Economics
199 Social Sciences: International Relations, Area & Regional Studies
200 Social Sciences: Political Science or Government
201 Social Sciences: Sociology
202 Social Sciences: Applied (General, Agricultural Economics, Foreign Service, Industrial Relations, Public Administration, Social Work)
203 Trade and Industrial Training
204 Agriculture and Forestry
205 Aeronautical Technology
206 Chemical Technology
207 Civil and Architectural Technology
208 Electrical and Electronic Technology
209 Industrial, Mechanical and Instrumentation Technology
210 Health Services
211 Scientific Data Processing
212 Business and Commerce
213 Education
214 Journalism
215 Applied, Fine and Graphic Arts
216 Home Economics
217 Library Technology
218 Bible Study
219 Fire Protection and Police Technology

APPENDIX 7

OE Project No. 6-1889

COLLEGE SUGGESTOR REACTION SHEET FOR STUDENTS

1. Name________________________________ 2. Date_______

3. School____

4. Did you know about the availability of the COLLEGE SUGGESTOR in your School?

1____Yes 2____No If you did, how did you learn about it? 3______________

____

5. If you used the COLLEGE SUGGESTOR, where was this done?

1____Library 2____Counselors reception room
3____In interview with counselor

6. Did you learn anything about colleges from your use of the COLLEGE SUGGESTOR you did not know before? 1____Yes 2____No
What of most importance to you did you learn? 3________________

____

____

7. Did you change your college plans as a result of information you received from the COLLEGE SUGGESTOR? 1____Yes 2____No

8. What information about colleges did you need that you did not find in the COLLEGE SUGGESTOR but found elsewhere? 1_______________

____

Where did you find it? 2________________________________

____

What information did you need that you could not find anywhere? 3__________

____

9. By what date had you decided on the college or colleges to which you would apply? ________________________________

10. What do you think of the COLLEGE SUGGESTOR?____________________

____

____

____

11. Was the time you spent with the COLLEGE SUGGESTOR worth your while? 1____Yes
2____No
Why or why not?_____________________________________

____

APPENDIX 8
OE Project No. 6-1889

COLLEGE SUGGESTOR REACTION SHEET FOR COUNSELORS

Name (optional) ______________________ School ______________________

Please indicate below for each of the groups of characteristics in the COLLEGE SUGGESTOR the approximate frequency of it use. If you did not use the device, estimate what you think the frequency of use would be. Indicate the basis for your judgments as follows:

_____ Based on actual use with students.
_____ Based on what I think students would do were I to use the device.

Use the following classifications in making your judgments:

1 - Used 75% of the time
2 - Used between 25% and 75% of the time
3 - Used less than 25% of the time

_____ Location
_____ Size
_____ Control (Private, Public, etc.)
_____ Prerequisites for admission
_____ Admission Information
_____ Costs

_____ Financial aid available
_____ Programs (Libral Arts, Fine Arts, etc.)
_____ Characteristics of student body
_____ Characteristics of faculty
_____ Degree majors available
_____ Occupational programs available

What information about colleges did you need that you did not find in the COLLEGE SUGGESTOR? ______________________

What do you think are the most effective aspects of this device in relationship to your guidance of college-bound students? ______________________

What do you think are the least effective aspects of the COLLEGE SUGGESTOR? ______________________

Please give us any additional comments you feel might be useful in helping us evaluate the use of the COLLEGE SUGGESTOR in a high school like yours. Use the back of this sheet if needed.

APPENDIX 9

OE Project No. 6-1889

the college suggestor

Instructions For Using The Plastic Viewer

- Daylight in front is the best light source for the viewer and background light above is best for reading college identification numbers from the grid.

- Locate the plastic viewer on a desk or table with its open back pointed towards a window. Try to have a light source above or behind you as well.

- Place a white sheet of paper underneath the viewer to reflect light up through the viewer. The reverse side of this instruction sheet is intended for this purpose. Please replace this instruction sheet in the deck after use.

- If it is necessary to use the College Suggestor deck in an interior room or at night, try to arrange lights so they will substitute for daylight. The viewer may be held up against a light source to search for clear spots, or, a clip-on light may be used to convert it to a light box. CAUTION - The plastic viewer is made from plexiglass. Too much heat from a bulb may char it.

APPENDIX 10
OE Project No. 6-1889

THE COLLEGE SUGGESTOR

Counselor Packet

Before using the College Suggestor with a student, the counselor should have the student fill out one of the enclosed characteristics sheets by having the student respond to the information asked for on the top of the sheet and by instructing the student to study the lists of characteristics printed on both the front and back of the sheet. After the student has had time to familiarize himself with the characteristics, he should be asked to underline or check those characteristics which he wishes to use from the College Suggestor. If, in the process of exploring characteristics, additional ones are used, these should be indicated on the sheet. The purpose of this is to provide a record of the characteristics used to ascertain the frequency and type of characteristics used by different types of students. The used sheets should be kept in the packet. They will be collected periodically.

The College Suggestor is easy to use, but the counselor will find that it may take several trials to "catch on" to lining up the cards and reading them. Instructions for using the plastic viewer are provided and instructions on the use of the cards are found inside the manual. Splitting the deck into two parts and putting one section in the inside of the blue box lid will make it easier to get to the cards. Note the color coding of the sections and the identification number on each card. This will help you in returning the cards to their proper positions in the deck. When the deck is not being used the cards should be in their original position, since this will keep them from developing a curvature.

If you have any questions about the use of the device, please ask the person at your school who has been designated to coordinate the use of the College Suggestor or call the Principal Investigator as follows:

Dr. B. Claude Mathis
Associate Dean
The Graduate School
Northwestern University
Evanston, Illinois 60201

Phone: 492-7264

Remember that the College Suggestor which you have is not a commercial model. It is a developmental prototype for experimental use only. Its use in this field test is to determine both strengths and weaknesses. You will be asked at the end of the year to comment in depth on your use of the device.

APPENDIX 11

OE Project No. 6-1889

Instructions for Student Use of the COLLEGE SUGGESTOR

The COLLEGE SUGGESTOR is a device which will help you locate the names of colleges and universities with the characteristics which you think are important for you in choosing a college to attend. The box which you have contains 219 plastic sheets, each having an identical grid printed on it. Each sheet represents a college characteristic and each small number space on the grid represents a college. To identify colleges having the characteristics in which you are interested, you should follow the steps outlined below:

1. Remove the top of the box and place about half the plastic sheets in the top. Splitting the deck in this way makes the cards easier to handle. Read the directions in the manual.

2. Take one of the characteristics sheets out of this packet (three columns printed on both sides). Fill out the heading at the top of the sheet. In addition to your name, write your grade level (Freshman, Sophomore, Junior, Senior). Also, put a number at the top of the sheet representing how many times you have used the COLLEGE SUGGESTOR. Fill out a new sheet each time you use the device.

3. Look through the characteristics and check those you would like to use in finding a college to attend.

4. Take the characteristics sheet and remove from the card deck those plastic sheets representing characteristics you have chosen. Each plastic sheet has the number of the characteristic at the top. Note: there are three errors on your characteristics sheet. No. 126 should read "More than one-fourth women graduates enter graduate study". No. 105 should read "Student body all women", and No. 106 should read "Student body all men". These are correct in the manual which is inside the box.

5. Group your characteristics in units of six sheets. Take the first unit and place the cards on the plastic lecturn. Be sure that the white gloss sheet is underneath to provide the contrast you need. (The white gloss sheet should be in the packet or in the box.) Line the cards up so that they are co-incident. They are co-incident when the statement at the bottom of the cards, "THE COLLEGE SUGGESTOR", looks as if it were on only one card.

6. Next, look for squares where the white gloss backing sheet appears through all six cards through the small opening in the square which is co-incident all the way through. Copy the numbers in these squares down on a sheet of paper. They represent colleges having all six of those characteristics. Repeat the process for the next unit of six characteristics. Compare your numbers for each unit of six cards used. Numbers which appear in each list represent colleges having all the characteristics you are looking for. If you locate no colleges with all the characteristics you want, remove the cards representing the least important characteristics and see if this helps to suggest a college.

7. If you use the yellow location cards, place them on top of your stack, or use them separately, since the contrast between the gloss sheet and the yellow is not too good.

8. Take the numbers you have located and refer to the manual to match the numbers to the names of the colleges they represent.

9. When you have finished, place the cards back in the box in their correct order and put the top on again. Put your characteristics sheet in the packet.

APPENDIX 12

OE Project No. 6-1889

To: COLLEGE SUGGESTOR PARTICIPANTS
From: B. CLAUDE MATHIS, NORTHWESTERN UNIVERSITY

We are now approximately half-way into the field test of the College Suggestor, with the next several months involving the greatest use of the device. I should like to share with you some of the problems encountered so far and indicate to you how these might be dealt with in your use of the device.

The major problem we have encountered is in the inability of the user to get the information he needs from the device if more than 6 or 8 cards are used at one time. This represents a design problem and I have already communicated the necessity for design changes to the Office of Education. These design changes should include a larger card with larger apertures so that small variations in card size will not be as crucial as they are at the present time. These design changes, of course, will not affect the present instrument which you have. The combination of the lack of an adequate light source built into the plastic lectern, together with the cards as they are now designed, does make the recovery of data for more than 8 cards at any one time a difficult procedure. I suggest that you have students arrange their characteristics into groups of 6 to 8 and use the deck by searching these groups separately.

The characteristics sheet which you are using contains two errors. Characteristics #105 and 106 are reversed on the sheet in comparison to the labels on the College Suggestor cards. Characteristic #126 is not labeled correctly on the sheet. This should relate to 1/4th women graduates rather than 1/2 as it now reads. The information contained on the characteristics list in the Manual is correct, and I am having corrected characteristics sheets printed so that any additional ones which you need will be correct. The labels on the plastic cards are correct. The omission of numbers on the characteristic sheet simply means that the characteristics represented by those numbers were not considered to be useful in the final assembly. Rather than re-number all characteristics, we simply omitted the discarded ones.

You have probably noted that some numbers are omitted in the list of colleges in the Manual. These numbers represent colleges that either ceased operation or merged with other colleges while the Manual was being printed. Rather than re-number all the colleges, we omitted those which had to be dropped.

Most counselors have indicated to me that they find the device helpful in expanding the range of their own information about colleges. Let me remind you again that the data in the College Suggestor are up-to-date as of the Spring of 1965. I am certain that many things have changed at colleges since then, particularly tuition levels. These bits of information could be obtained from current catalogues.

I have received, finally, delivery of all of the devices expected. I shall be in touch next week with your schools to find out how many additional devices you think you may need. I have prepared a packet for student use, similar to the one given to counselors, with specific instructions for the student. If you would like to have additional devices for independent use by the student, let the coordinator at your high schools know and I will be happy to let you have as many as I have available.

APPENDIX 13

OE Project No. 6-1889

COLLEGE ADMISSIONS COUNSELING SUPPORT SYSTEMS [1]

COUNSEL
Westport, Connecticut

Computer Counseling, Inc.
Baltimore, Maryland

The American College Selector
Los Angeles, California

The Continuing Education Institute, Inc.
Phoenix, Arizona

Computer College Selection Service
Pittsfield, Massachusetts

National Cash Register Company
Dayton, Ohio

SELECT
New York, New York

Edu-Data Service Center
Washington, D. C.

The American College Selector
Los Angeles, California

College Placement Assistance Center
Union City, New Jersey

Student Admissions Center
New York, New York

Educational Communications Service
South Dartmouth, Massachusetts

College Admissions Center of Boston
Boston, Massachusetts

Interactive Learning Systems, Inc.
Boston, Massachusetts

Central College Clearing House
Salem, Massachusetts

The National Center for College Admissions
Newark, New Jersey

EDUAID
Brooklyn, New York

College Admissions Research Service Center
Kansas City, Missouri

North American Educational Research Studies
Elberon, New Jersey

Foundation for American Education
Chicago, Illinois

Association for College Admissions Counselors
Evanston, Illinois

SEARCH
New York, New York

Chronicle Guidance Publications, Inc.
Moravia, New York

Educational Testing Service
Princeton, New Jersey

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[1] This list is neither exhaustive nor critical. The inclusions or exclusions of companies appropriate to this list should not be interpreted either as an endorsement or a criticism of their activities in the field of college admissions counseling.